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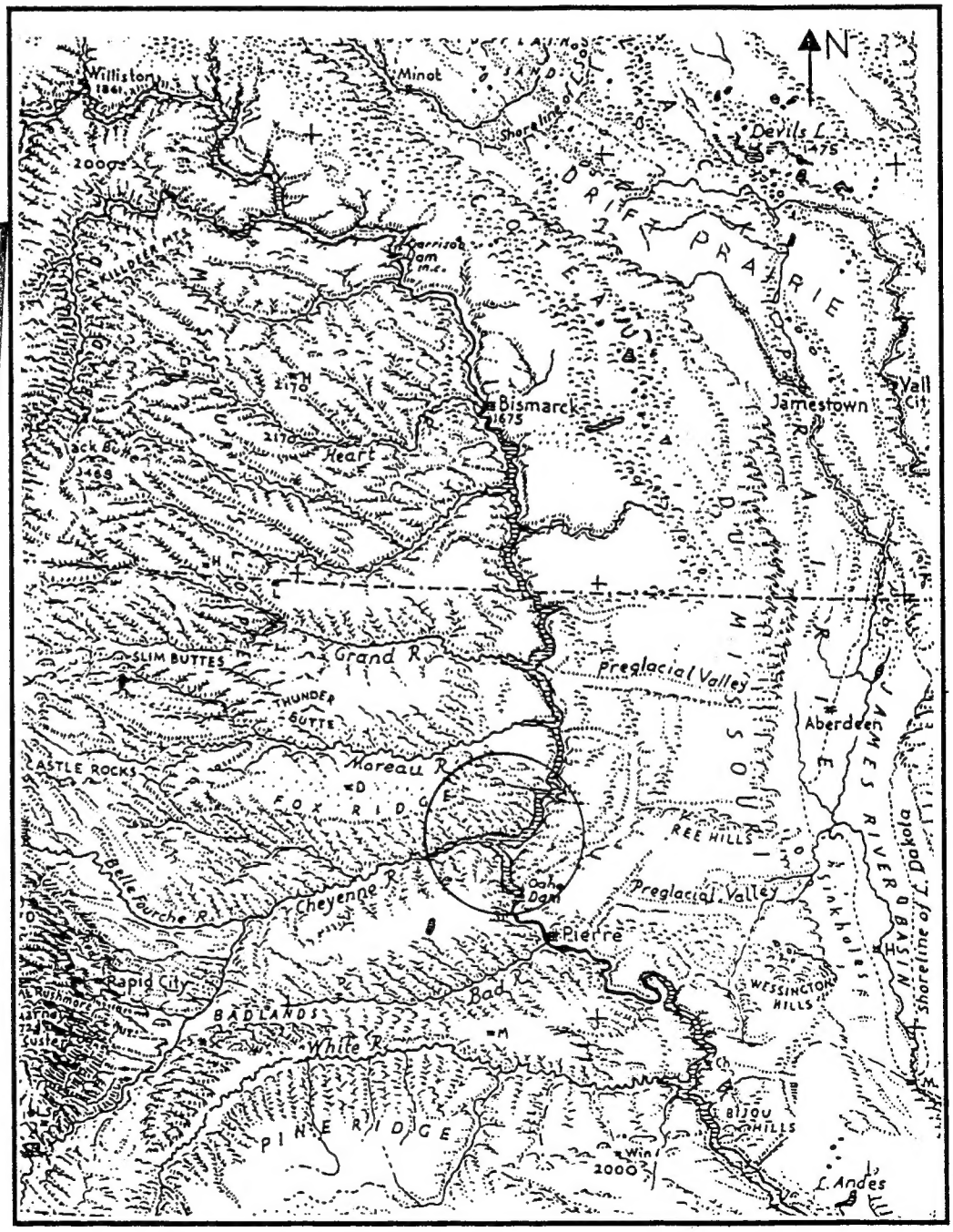
Archeology Laboratory, Augustana College
Archeological Contract Series Number 79

Cultural Resource Reconnaissance of U.S. Army Corps of Engineers Lands in Dewey County, South Dakota from the Forest City Recreation Area to the Mouth of the Cheyenne River

Volume I
Main Report



US Army Corps
of Engineers
Omaha District

CULTURAL RESOURCE RECONNAISSANCE OF U.S. ARMY CORPS OF ENGINEERS LANDS IN DEWEY COUNTY, SOUTH DAKOTA FROM THE FOREST CITY RECREATION AREA TO THE MOUTH OF THE CHEYENNE RIVER

[GRAND-MOREAU AND BAD-CHEYENNE ARCHEOLOGICAL REGIONS]

VOLUME 1
MAIN REPORT

BY

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WITH CONTRIBUTIONS BY

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MARCH 31, 1993

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A cultural resources reconnaissance (Class II Inventory) of the right bank of Lake Oake in Dewey County, South Dakota, was undertaken by the Archeology Laboratory, Augustana College, Sioux Falls, South Dakota, for the U.S. Army Corps of Engineers, Omaha District (Contract No. DACW45-91-C-0144), between August 1991 and August 1992. The field survey was conducted during the period March 12-April 10, 1992. The survey area is estimated at approximately 15,740 acres (24.6 sq. miles). A total of six sites and 19 isolated finds were evaluated during the

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project. The major site types recorded include prehistoric artifact scatters (n=2), stone circle sites (n=2) and stone cairns (n=2). Diagnostic materials from the Late Prehistoric and recent Historic periods were recovered. Analyses are undertaken on the site types and artifacts, and management priorities are discussed.

ABSTRACT

A cultural resource reconnaissance (Class II Inventory) of the right bank of Lake Oahe in Dewey County, South Dakota was undertaken by the Archeology Laboratory, Augustana College, Sioux Falls, South Dakota, for the U.S. Army Corps of Engineers, Omaha District (Contract No. DACW45-91-C-0144), between August 1991 and August 1992. The field survey was conducted during the period March 12-April 10, 1992. The survey area is estimated at approximately 15,740 acres (24.6 sq. miles). A total of six sites and 19 isolated finds were evaluated during the project. The major site types recorded include prehistoric artifact scatters (n=2), stone circle sites (n=2) and stone cairns (n=2). Diagnostic materials from the Late Prehistoric and recent Historic periods were recovered. Analyses are undertaken on site types and artifacts, and management priorities are discussed.

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ACKNOWLEDGMENTS

This project involved the assistance and cooperation of numerous individuals. The authors would especially like to acknowledge the Cheyenne River Sioux Tribe and Mr. Gregg J. Bourland, Tribal Chairman, for granting permission to cross tribal lands. Austin Keith, Administrative Officer for the Cheyenne River Sioux Tribe, was instrumental in obtaining access. Rich Berg, archeologist with the U.S. Army Corps of Engineers, Omaha District office, expedited the performance of the project.

Lynette Rossum, Timothy V. Gillen, David J. Roetman, and Katherine Winham of the Archeology Laboratory, Augustana College all assisted with the many different aspects of producing this report. Report editing was accomplished by Lynette Rossum. Christine Gors expertly produced the technical artifact illustrations.

1. INTRODUCTION

Type and Purpose of Investigation

This report presents the results of a cultural resource reconnaissance (Class II Inventory) of the right bank of Lake Oahe in Dewey County, South Dakota (Figure 1). The Archeology Laboratory, Augustana College (AL), Sioux Falls, South Dakota (Contractor) was awarded the contract (Contract No. DACW45-91-C-0144) to perform the scope-of-work in 1991-1992. The project was sponsored by the U.S. Army Corps of Engineers (USACE), Omaha District. The reconnaissance survey involved:

(a) An exhaustive search and comprehensive review of existing literature and records for the entire reconnaissance area.

(b) Consultations with professionals and amateurs knowledgeable in the local history and prehistory of the area.

(c) Consultation with Native American groups from the Cheyenne River Sioux Tribe Indian Reservation to establish the location of religious and ceremonial sites and detail historic interactions between Native Americans and Euro-Americans.

(d) A field examination of 100 percent of the project lands including shoreline survey, limited subsurface testing and collection of artifacts, and geomorphological work.

(e) Data analysis.

(f) Preparation of a comprehensive investigation report and journal article.

(g) Preparation of a public education program (slide or video).

Purpose of Survey

The stated purpose of this reconnaissance is to fulfill the Omaha District's obligations to the Federal preservation legislation and associated implementing regulations listed below.

Public Law 86-523, Reservoir Salvage Act of 1960 as amended by P.L. 93-291 (Archaeological and Historic Preservation Act of 1974 - Moss Bennett Act).

Public Law 89-665, National Historic Preservation Act of 1966 as amended by P.L. 96-515.

Public Law 91-190, National Environmental Policy Act of 1966 as amended by P.L. 94-52.

Public Law 95-341, American Indian Religious Freedom Act.

Executive Order 11593.

Implementing regulations:

36CFR Part 60: National Register of Historic Places.

36CFR Part 63: Determinations of eligibility for inclusion in the National Register of Historic Places.

36CFR Part 66 (draft): Recovery of scientific, prehistoric, historic, and archeological data: methods, standards, and reporting requirements.

36CFR Part 800: Protection of historic and cultural properties.

Study Area

The reconnaissance area encompasses all Oahe project lands in Dewey County, South Dakota, located between the shoreline and the takeline on the west bank of Lake Oahe Reservoir in the area from the Forest City Recreation Area south to the mouth of the Cheyenne River. The survey area is estimated at approximately 15,740 acres (24.6 sq. miles) and is located within the Grand-Moreau and Bad-Cheyenne archeological regions.

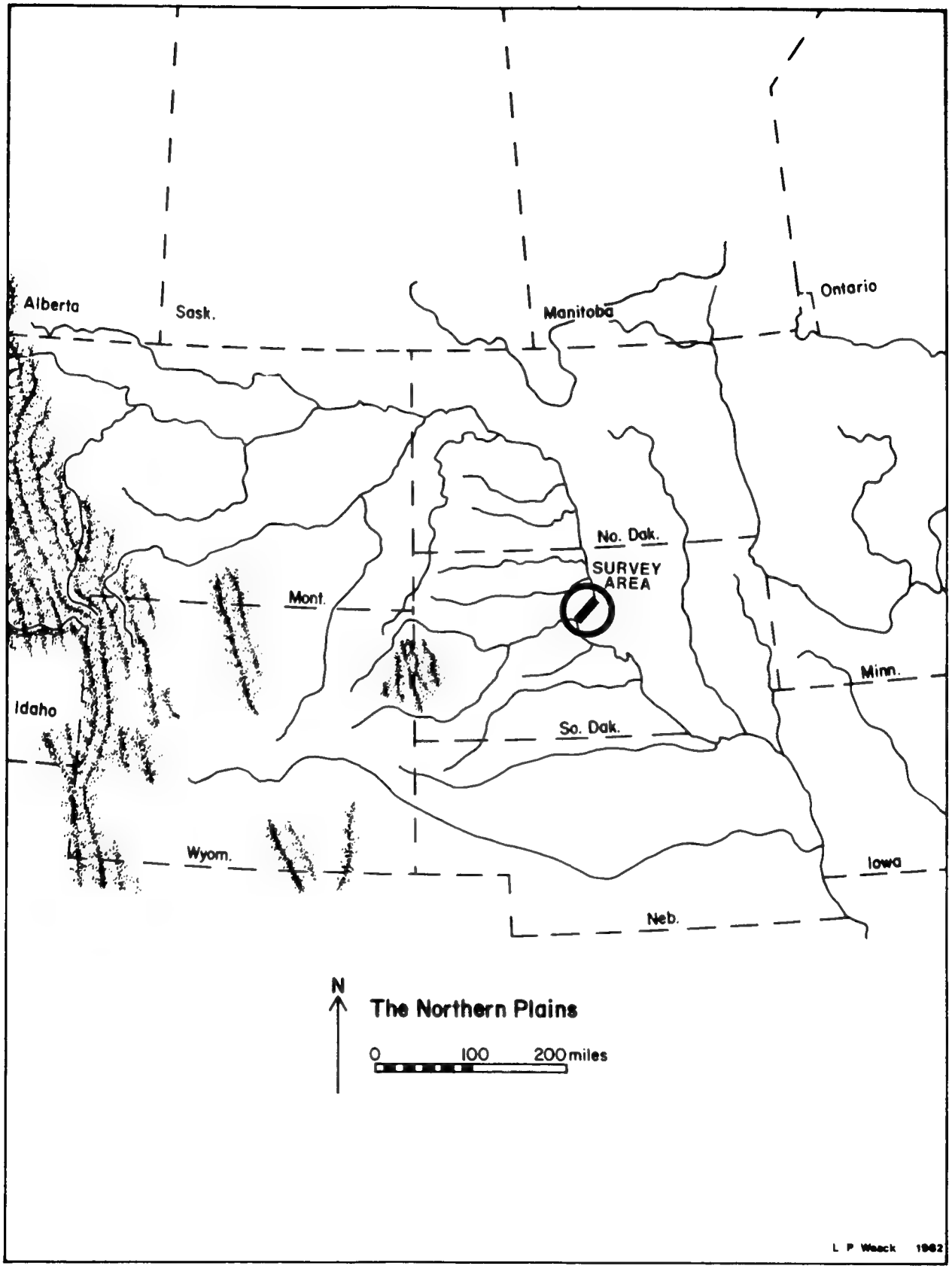


Figure 1. Locations of Lake Oahe and Dewey County.

Summary of Personnel and Procedures

L. Adrien Hannus and R. Peter Winham acted as Co-Principal Investigators for this project, and served as liasons with the project's consultants. Edward J. Lueck served as Field Director for the on-the-ground survey and also accompanied Brian T. Tracy during the geomorphological investigation. The literature search was undertaken primarily by Lueck; Lueck visited or contacted all of the major repositories in the region.

The field crews were comprised of Lueck, Timothy V. Gillen and Dave Roetman. Accounting and administration, as well as other aspects of project organization, including report editing, were supervised by Lynette Rossum. Complementing the project team, as needed, were four specialists: 1) Brian T. Tracy - geomorphology; 2) Christine Gors - technical artifact illustration; 3) Todd Kapler - historical archeology/architectural history; and 4) William Soeffing - faunal identification (the services of Kapler and Soeffing proved to be unnecessary). A number of individuals, including David Roetman, assisted in the preparation of the report.

Report Organization

This report is divided into two sections which are presented in two volumes. The main section (Volume 1) provides a narrative account of the project, summaries of the cultural resources located, analyses of the data, and management recommendations. The second section (Volume 2) contains supporting information including the individual state site forms on which all site-specific data are reported (with records search information for historic sites), and appendices providing lists of the basic data and background information. Appendix H provides the reader with a correlation of temporary field numbers and the official site numbers.

Disposition of Artifacts and Archival Materials

All original field notes, maps, profiles, records, photographic negatives, slides and other archival materials (see Appendix G) are the property of the U.S. Army Corps of Engineers, Omaha District office, Omaha, Nebraska. They will be stored with the artifacts at the South Dakota State Archaeological Research Center.

2. REGIONAL LOCATION AND ENVIRONMENT

Physiography

The project area is situated on the edge of, but essentially above, the Missouri River Trench, in what is termed the Pierre Hills physical division of the Missouri Plateau in South Dakota (Westin and Malo 1978) (Figure 2). The terrain in the project area is quite variable, exhibiting long ridges, steep breaks and some level terraces above the reservoir. The topography is composed of the Missouri breaks (Plate 1); rolling to steep loess and glacial drift mantled upland ridges with integrated drainages (Plate 2); old Missouri River terrace remnants (Plate 3); and intermittent stream terraces (Plate 4). The project area lies within the Upper Cretaceous shale geologic unit of South Dakota (Figure 3).

With few exceptions, the soils circumstance in the survey area can be defined as predominantly shallow, nearly level to very steep soils on uplands (Table 1).

Missouri River Trench District Soils

Missouri Valley and Uplands

Soils on the upland ridges in this area include Chantier Clay (ChB), Dupree-Opal Clays (DoB) and Hurley-Slickspots Complex (HsB). Soils on steep slopes are Sansarc-Shale Land Complex (ScF), Sansarc-Opal Clays (SbE) and Dupree-Sansarc Clay (DsE). Soils on moderate slopes are Sansarc-Opal Clays (SbE), Dupree-Sansarc Clay (DsE), Shale Land (Sh), Chantier-Shale Land Complex (CsC) and Sansarc-Opal Clays (SbC). Soils on colluvial slopes/terraces include Swanboy Clay (Sw), Swanboy-Slickspots Complex (Sy), Promise Clay (PrB) and Sansarc-Dupree Clays (SaE). Soils on old Missouri River terraces (T3?--120-160 feet above pre-dam Missouri River level) are Schamber Gravelly Sandy Loam (SdC), Lowry Silt Loam (LwB), Agar Silt Loam (AgB) and some unclassified soils.

Soils along Stove Creek (Stove Creek Bay), Scatter Butte Creek, Pascal Creek, Alberts Creek, Bull Creek, East and West Branches of Willow Creek Bay, No Heart Creek, Tall Prairie Chicken Creek, Charlie Creek and Fox Creek

In these areas, soils along the upland ridges consist of Chantier Clay (ChB) and Dupree-Opal Clays (DoB). Soils along upland moderate slopes are Sansarc-Opal Clays (SbE), Dupree-Sansarc Clay (DsE) and Shale Land (Sh); soils along colluvial slopes and relatively old terraces along intermittent streams are Swanboy Clay (Sw), Swanboy-Slickspots Complex (Sy), Promise Clay (PrB) and Sansarc-Dupree Clays (SaE); and soils on steep (some high, middle and low) slopes are characterized as Sansarc-Shale Land Complex (ScF), Sansarc-Opal Clays (SbE) and Dupree-Sansarc Clay (DsE). Soils in ponded areas (creek, recent floodplain) are Promise-Swanboy Clays (Pw).

Flora and Ecosystems

Archeological sites can be assigned to ecosystems. The ecosystem classifications used in this report are taken from the State Historical Society of North Dakota Guidelines (Snortland et al. 1989) and are briefly outlined below.

The Bottomland and River Terrace and Bottomlands Ecosystems include all land occupied by rivers and streams and their annual floodplains for the former, and nearly level to undulating, broad, tree-covered river terraces and bottomlands for the latter. Flora consist of cottonwoods (Populus deltoides), sandbar willow (Salix interior), juniper (Juniperus communis), western wheatgrass (Agropyron smithii), green needlegrass (Stipa viridula), big bluestem (Andropogen gerardi), needle-and-thread grass (Stipa comata) and

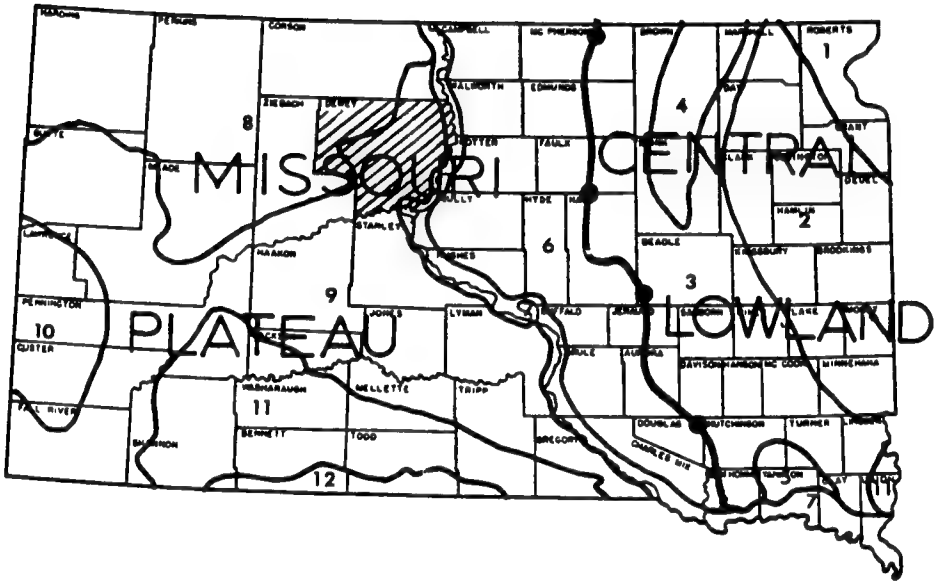


Figure 6. Physical divisions of South Dakota.

1. Minnesota River—Red River Lowland
2. Coteau des Prairies
3. James River Lowland
4. Lake Dakota Plain
5. James River Highland
6. Coteau du Missouri
7. Missouri River Trench
8. Northern Plateaus
9. Pierre Hills
10. Black Hills
11. Southern Plateaus
12. Sand Hills

Source: Flint, R. F. Prof. Paper 262, USGS, 1955.

Figure 2. Location of Dewey County in relation to the physical divisions of South Dakota (after Flint 1955) [from Westin and Malo 1978:Figure 6].

Plate 1. View of glaciated uplands overlooking Willow Creek, facing NE.

Plate 2. View of loess-mantled uplands east of the YMCA camp (HS3), facing E.

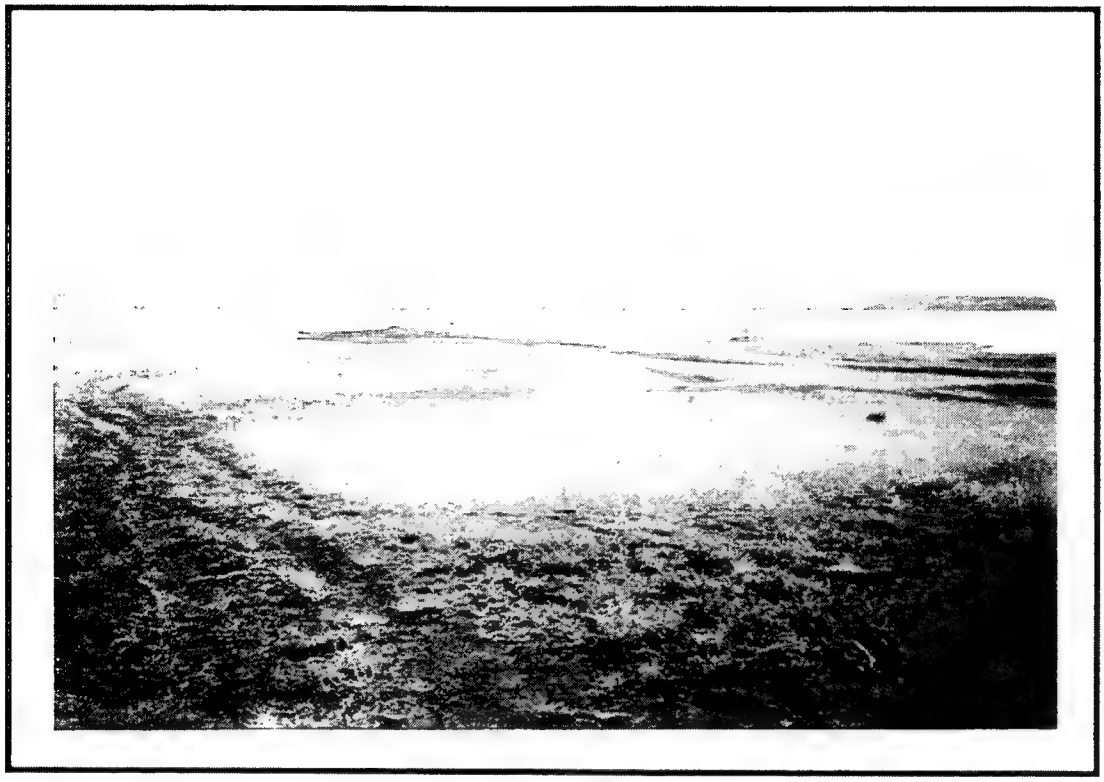


Plate 3. View of old Missouri River terraces overlooking 39DW173 area, facing S.

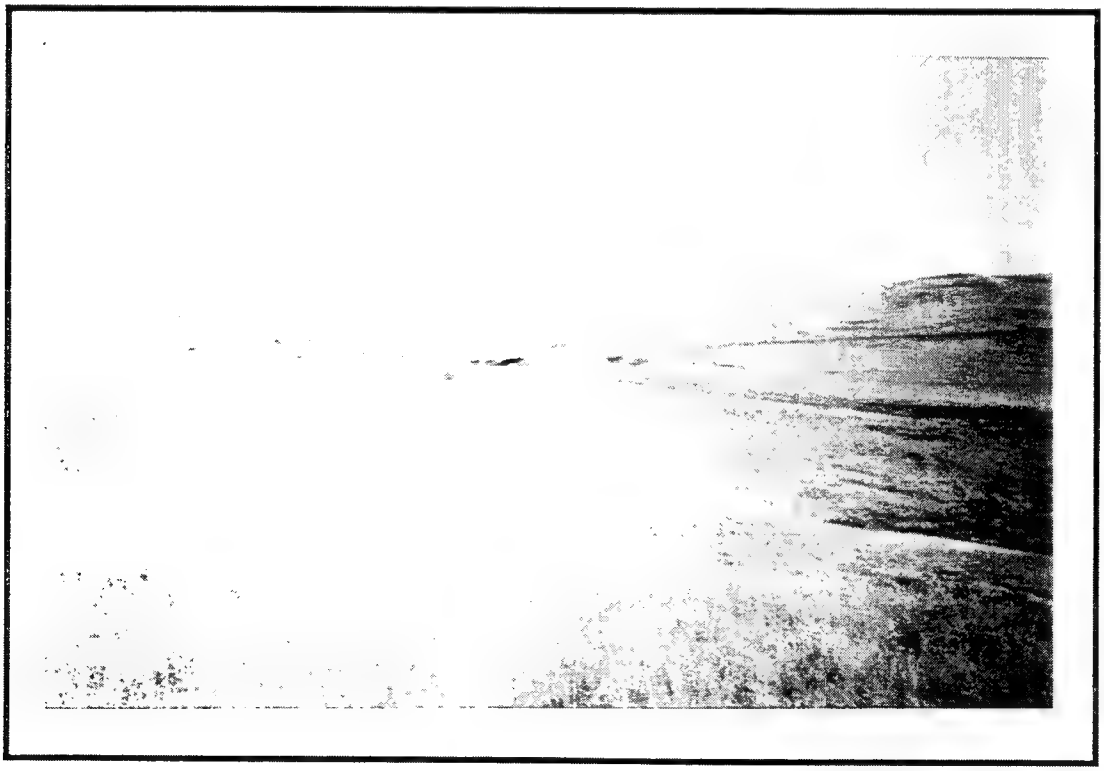


Plate 4. View of intermittent stream terraces looking up Stove Creek, facing NNW.

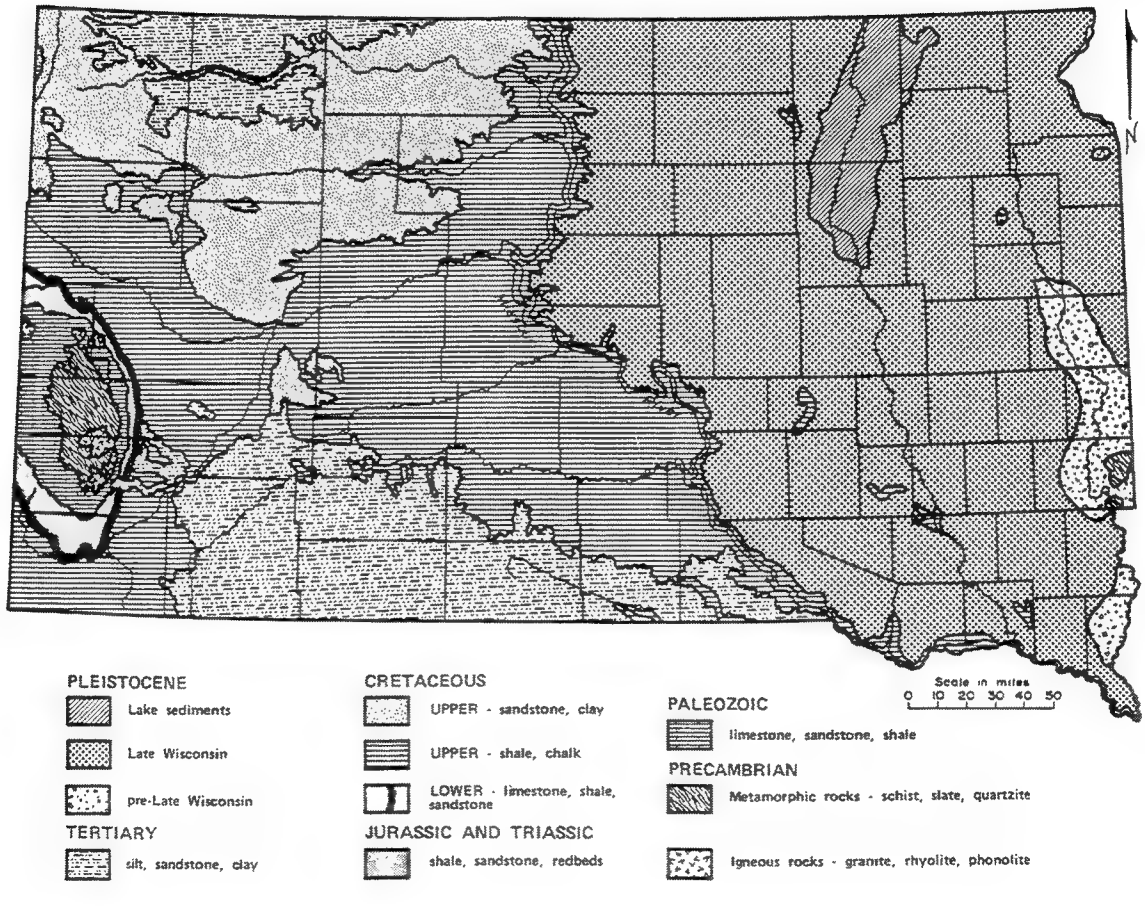


Figure 3. Geologic units in South Dakota (adapted from Publications of the South Dakota Geological Survey 1991).

Table 1. Number and Percentage of Acres and Number of Acres Having Dense Gravel Concentrations and Dense Rock Concentrations for Each Soil Type in the Project Area.

Soil Type	Soil Name	No. of Acres	Percent	Field Observations	
				Dense Gravel Concentration (acres)	Dense Rock Concentration (acres)
Pw	Promise-Swanboy Clays	163.0	1.00		
Sw	Swanboy Clay	130.5	0.80		
Sy	Swanboy-Slickspots Complex	59.0	0.40	6+ (10.00%)	
PrB	Promise Clay	106.0	0.69		
SaE	Sansarc-Dupree Clays	1,651.0	10.50	12+ (0.73%)	
SbE	Sansarc-Opal Clays	4,939.5	31.40	6+ (0.12%)	
DsE	Dupree-Sansarc Clay	1,133.5	7.20	5+ (0.44%)	
ScF	Sansarc-Shale Land Complex	2,256.0	14.33	56+ (2.30%)	
Sh	Shale Land	4,689.0	29.80	9+ (0.19%)	
OsC	Chantier-Shale Land Complex	15.0	0.09		
SbC	Sansarc-Opal Clays	26.0	0.17		
ChB	Chantier Clay	9.0	0.06		
DoB	Dupree-Opal Clays	66.5	0.40		
HsB	Hurley-Slickspots Complex	11.0	0.07		
SdC	Schamber Gravelly Sandy Loam	9.0	0.06		
LwB	Lowry Silt Loam	47.0	0.30		
AgB	Agar Silt Loam	36.0	0.23		
Unclassified	Unnamed	391.0	2.50		
TOTALS		15,738.0	100.00	94+ (13.78%)	

fringed sagewart (Artemisia frigida). These ecosystems are inundated by Lake Oahe, although they are present below Oahe Dam as the T0 terrace and bottomlands.

The most widespread ecosystems in the survey area are the Upland Grassland Ecosystem and the River Breaks Ecosystem. The Upland Grassland Ecosystem includes hilly uplands interspersed with rounded hills exhibiting steeper-sided knobs of sandstone, siltstone, silty shales and claystone bedrock (Stewart and Stewart 1973). Soils are loamy, clayey and sandy and support a sparse, but varied, vegetative community. Flora include a predominance of little bluestem (Andropogen scoparius) with needle-and-thread grass (Stipa comata), prairie sandreed (Calamovilfa longifolia) and, on thicker soils, western wheatgrass (Agropyron smithii), blue grama (Bouteloua gracilis), green needlegrass (Stipa viridula), and big bluestem (Andropogen gerardi).

The River Breaks Ecosystem, adjacent to major rivers and streams, is comprised of deeply dissected "breaks" (Pierre Shale) often barren of plant life, but occasionally supporting scattered shrubs, grasses and forbs.

Additional ecosystems that are defined and that make up a minor portion of the survey area are described as follows.

The Terrace Ecosystem consists of former river bottoms and floodplains that are now situated adjacent to, but higher than, the present Bottomland Ecosystem. Flora include a predominance of blue grama (Bouteloua gracilis), western wheatgrass (Agropyron smithii), needle-and-thread grass (Stipa comata), and/or prairie sandreed (Calamovilfa longifolia). The major terraces in the area occur along portions of the Missouri River and Tall Prairie Chicken Creek.

The Toe Slope Ecosystem encompasses areas on gentle, concave lower slopes or in swales, including slumps, earthflows, and soil creep accumulations, vegetated by mixed grasses, threadleaf sedge (Carex filifolia), prairie junegrass (Koeleria cristata), and various forbs.

Fauna

Throughout the last 10,000 years, a wide variety of wildlife has been supported by the study area. Studies of faunal use (Brown, Hanson and Gregg 1983:102-107) based on descriptions from selected tribal groups within North Dakota and comparable in part to the current study area, indicate exploitation of the following animals: large mammals - bison (Bison bison), elk (Cervus elaphus), mule deer (Odocoileus hemionus) and white-tailed deer (Odocoileus virginianus); and small mammals - coyote (Canis latrans), fox (Vulpes spp.), kit fox (Vulpes velox), bobcat (Lynx sp.), dog [introduced by man] (Canis familiaris), otter (Mustela lutra canadensis), badger (Taxidea taxus), porcupine (Erethizon epixanthus), beaver (Castor canadensis), raccoon (Procyon loter), prairie dog (Cynomys ludovicanus), skunk (Mephitis americana), muskrat (Ondatra zibethicus), weasel, ermine (Mustela sp.), mink (Mustela vison), cottontail (Sylvilagus sp.), jack rabbit (Lepus sp.), red squirrel (Sciurus hudsonicus), and ground squirrel (Citellus sp.).

In addition to the mammals, numerous birds and fish were present and hunted by the Native Americans. These included the eagle (Buteoninae), hawk (Buteo sp.), owl (Tytonidae/Stridaidae), prairie-chicken (Tympanuchus cupido), ducks/geese (Anatidae), Northern pike, jack fish, yellowhead (Esox lucius sp.), walleye (Stizistedion vitreum glaudem) and channel catfish (Ictalurus punctatus).

Climate

The climate of South Dakota is described as a typical "continental climate," with weather patterns over a period of time characterized by daily and seasonal extremes in temperature, light to moderate precipitation which tends to be irregular in time and coverage, low relative humidity, plentiful sunshine and nearly continuous air movement.

Conditions are limiting or marginal for most crops, with an average annual precipitation of approximately 16.5 inches; records at the Pierre station (Spuhler, Lytle and Moe 1971) show the average date for last frost in spring is May 5 and the average date for first frost in fall is October 6.

The general climatic pattern of Dewey County is described below. In winter, temperatures may fall below -20 degrees F and in summer, rise to above 100 degrees F. Of the total annual precipitation (16.5 inches), 12.53 inches, or 76 percent, usually falls from April through September in thunderstorms. Average seasonal snowfall is 31 inches, with an annual variation from 13-82 inches. The prevailing wind in the winter (from November through early spring) is from the northwest; southern winds prevail the rest of the year. Average windspeed is 10-11 miles per hour.

Extremes of weather are not uncommon in South Dakota. Tornadoes, wind storms, hail storms and blizzards generally occur an average of several times a year.

Human Geography

Human impacts on the survey area are most obvious for the recent past, beginning with Euro-American exploitation of the area. Prior to that time the area was utilized by nomadic groups and nearby Plains Village settlers.

Preceding railroad construction, the Missouri River was the primary focus of Euro-American activity. The establishment of fur trading posts, military posts, farms, ranches, and towns resulted in numerous changes to the environment, including deforestation, increased pressure on the local floral and faunal resources and the breaking of the natural prairie sod cover for agriculture. The earliest pioneer homes in the study area appeared around A.D. 1890.

Undoubtedly the greatest impact on the study area was construction of the Oahe Dam, begun in 1948 and closed in 1958. Subsequently, 376,000 acres, much of it prime farmland, were flooded to create what is now Lake Oahe (see Lehmer 1971:19).

Present land use in the study area is centered around ranching, agriculture and recreation. Recreational use is common in the vicinity of several of the "bays." The nearest major center of population (1623 persons in 1980 census) is Gettysburg, South Dakota, located on the east side of the Missouri River.

3. RECONSTRUCTING THE PAST ENVIRONMENT

This section focuses on environmental changes postulated for the study area during the post-glacial Holocene period. Climatic changes experienced in a region through time may significantly affect the topography, as well as the technological and subsistence resource potentials for cultural groups. It has been the oscillating climate that has "played the most important role in regulating many of the other notable changes that have occurred and has certainly been the primary agent regulating geomorphic processes within the study region" (Wyckoff and Kuehn 1983:167).

A series of climatic episodes currently applied in North America is derived from named climatic periods in Europe, although there is some dispute as to whether climatic episodes observed in Europe are similar to those in North America. Figure 4 presents the most recent summary of Holocene climatic episodes and their characteristics as recognized on the Plains.

The following summary of the paleoclimate and paleoenvironment of the region is derived largely from Brown, Hanson and Gregg (1983:59-73).

The Late Glacial, Pre-Boreal, and Boreal episodes of the early Holocene together represent a period of warming in the Northern Plains and there is little paleoecological detail yet to differentiate these three episodes. During this period the Laurentide Ice retreated and glacial Lake Souris was present in north-central North Dakota. The Missouri and Little Missouri rivers should have been established in their essentially modern trenches. Grasslands should have been relatively lush and landforms relatively stable. "A spruce-aspen forest covered much of western North Dakota during the period ca. 12,000-10,000 B.P. (Bluemle 1975; Kehoe and Kehoe 1968; Moran et al. 1976)...and was gradually replaced by tall grass prairie as the climate warmed and dried" (Wyckoff and Kuehn 1983:149). The Dewey County project area, on the western edge of the late glacial areas, was probably similar to the grassland areas.

The Cochrane readvance of the Laurentide Ice is dated at ca. 5800 B.C. within the Atlantic period, so there is evidence for some fluctuation in temperature, and aridity probably fluctuated too, although the general pattern of the Atlantic was relative aridity.

During the Sub-Boreal climatic episode there were periods of significant increases in precipitation and decreases in temperature over the Atlantic. Very limited information is available for the late Sub-Boreal, Sub-Atlantic and Scandic times; what there is suggests climatic fluctuations and lack of stability.

The Neo-Atlantic episode is generally characterized as warm and moist in the Central and Northern Plains, while the Pacific episode is a time of drought. The subsequent Neo-Boreal was cooler and moister, allowing the Plains grasslands to flourish, and was accompanied by an increase in the size of bison herds. The earliest European observers on the Northern Plains witnessed favorable climatic conditions, peak human population densities, and peak cultural complexity. A general summary of changing conditions over the last 15,000 years is provided by Bluemle and Clayton (1982:Figure 8).

In general, the areas of the study region covered with relatively thin deposits of glacial sediment have undergone little topographic change since the last major blocks of stagnant ice melted, while the climatic fluctuations indicated above have produced changes in erosional and depositional situations in other areas (see Figure 3).

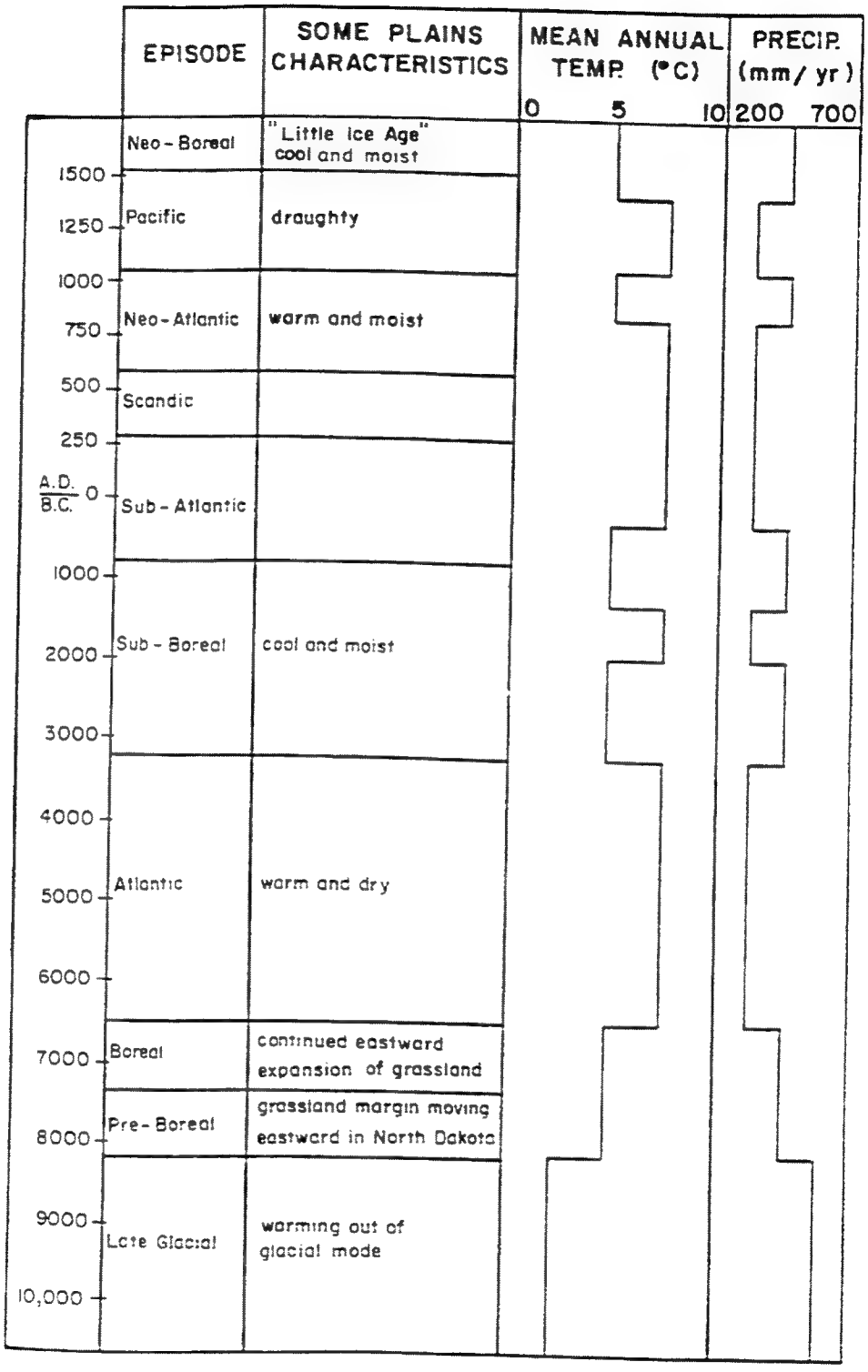


Figure 4. Holocene climatic episodes and some Plains climatic/ecological characteristics, from Wendland (1978); dates based on Libby half-life [from Brown, Hanson and Gregg 1983:Figure 3.10].

The Missouri River trench within the study area follows a course basically conforming to the outer limits of glaciation. Terraces are a prominent feature of the river, and terrace sequences can be very complex.

In summary, since the retreat of the glaciers the Dewey County survey area has not experienced any major topographic changes other than variable erosion and deposition of individual landforms. The "breaks" areas have been influenced the most by erosion which has formed, and is continuing to form, the present dissected landscape.

Terraces have formed along the Missouri and other major rivers as drainages intermittently downcut through previous floodplains. The upland plains and grassland areas, sometimes with deposits of glacial drift, have been less altered (from the Wisconsin glaciation--see Generalized Glacial Map of South Dakota, South Dakota Geological Survey Educational Series Map 2, n.d.).

Effects of the Oahe Reservoir

The damming of the Missouri River and consequent flooding of the lowlands have produced the most marked change in the visual landscape. These actions have resulted in the inundation of the lower terraces/floodplains of the Missouri and other rivers, and created a landscape which contrasts greatly with that which previously existed. Studies undertaken for the Commissioner of Indian Affairs on the Cheyenne River Indian Reservation prior to construction of Oahe Reservoir highlight the significance of the "bottomlands" for the Indian lifeway at that time.

4. LITERATURE AND RECORDS SEARCH

A literature and records search was conducted in early September of 1991 prior to undertaking the field survey. A reexamination of the records and files was completed after the survey, incorporating data gathered through field verification. Materials and literature were further examined between early April and late May of 1992. The section which follows provides a summary of the procedures used in the literature and records search. Following the latter section is an overview of the results of the literature and records search, as modified by field verification, and a summary of previous investigations.

Literature and Records Search Procedures

The literature search was undertaken in two phases. The aim of the first phase was to provide as much information as possible on the location of cultural resources within the project area prior to initiating the on-the-ground survey. The aim of the second phase was to provide comparative information on the cultural resources in the region for use in the analysis of the data collected during the survey and to address the research goals of the project.

The general format for the literature search is described below.

1. A list of legal descriptions of lands in the project area was compiled. Pertinent literature sources were drawn from documents on hand at the Archeology Laboratory and available at the Center for Western Studies, Augustana College. Because this project includes a consideration of oral history research with the local population, an attempt was made to compile a list of names of both Native American and non-Indian contacts and informants. During previous work in South Dakota the contractor had established good rapport with the Cheyenne River Sioux Tribal council.

2. All data from previous surveys and excavations conducted in and near the project area were evaluated and all histories/early accounts of the region examined.

3. The following repositories were visited or contacted since most contain a variety of rare (or unpublished) sources pertaining to the history, archeology and ethnohistory of the region:

Cultural Heritage Center, Pierre, SD;
South Dakota State Library, Pierre, SD;
South Dakota State Archaeological Research Center (SDARC), Rapid City, SD;
Midwest Archeological Center (MAC), National Park Service (NPS), Lincoln, Nebraska;
Bureau of Indian Affairs Office (BIA), Aberdeen, SD;
U.S. Army Corps of Engineers offices in Omaha and Pierre; and
Local historical societies (Gettysburg, SD).

4. Because no historic sites were identified, there was no need to examine land records and deeds at the Dewey County Courthouse in Timber Lake, South Dakota, or at the BIA Land Records Office in Aberdeen, South Dakota. Published oral histories were reviewed and oral interviews were conducted to assist with the search for the names of previous landowners and tenants, if any, of lands within the project area.

5. Oral history accounts, particularly those that concerned places of residence, locations of Native American sightings and/or areas of occupation and use, were compared for similarities and relationships with written accounts, previously known sites, and sites located during the current field survey.

6. Correspondence with additional repositories such as the Military Archives, the National Archives, and the Smithsonian Institution appeared to be unwarranted and was not pursued.

Literature and Records Search Overview

The initial literature and records search was conducted between September 10-13, 1991. This search focused on identifying the locations of previously recorded sites in and near the project area. To achieve this objective, efforts were concentrated on examining site records at the South Dakota State Archaeological Research Center, Rapid City, SD. As a result, the author was able to locate all previously recorded sites.

The resources utilized to accomplish the records research included site files at the USACE offices in Omaha; site files at the SDARC and MAC offices; old maps of the Missouri River and nearby areas produced by the USACE (1892; 1947), the Missouri River Commission (MRC) and the U.S. War Department (available at MAC and Archeology Laboratory, Augustana College); copies of the General Land Office survey maps (1898-1900) filed at the Cultural Heritage Center (Pierre) and the Dewey County Register of Deeds Office in Timber Lake; and old road and property atlases which were available at various offices in Pierre as well as from several private landowners. Because there were no historic sites there was no need to examine land records at the BIA Office in Aberdeen, SD or the Dewey County Register of Deeds Office in Timber Lake, SD.

Published and unpublished documents and manuscripts were examined at a number of institutions. In addition to materials on hand at both the Archeology Laboratory and the Center for Western Studies (Augustana College), documents were studied at the following institutions: Midwest Archeological Center (National Park Service), Lincoln; the South Dakota State Archaeological Research Center, Rapid City; and the USACE office in Omaha (site and survey records). Materials available through interlibrary loan from various sources were also examined.

In a few cases, the Smithsonian Institution's River Basin Surveys records do not allow the sites to be confidently located on current maps. Generally this circumstance occurs when sketch maps are lacking or are largely without scale; or because of reference to non-distinctive land features. The South Dakota State Site Files provide a 'best fit' determination for these sites developed by Jim Haug (SDARC). Old maps of the Missouri River (MRC 1894 and USACE 1891) indicate a number of structures as well as some of the Indian villages which later received trinomial site numbers. The sites previously recorded near the project area (which received trinomial site numbers) were identified during one broad, selective investigation (SIRBS); several small-scale investigations have also been conducted in and near the project area (see Table 4).

All previous investigations are listed in Tables 2, 3 and 4. Legal descriptions in Table 2 are sequentially ordered by township, range and section.

The records search accounted for all previously recorded sites in and/or near the project area and identified 22 previous investigations (2 investigations in the survey area [Artz 1980; Kurtz 1988]; and 20 nearby) conducted under the auspices of several different organizations or sponsoring agencies (see Tables 2 and 4). Two of the previous investigations are in-house BIA surveys. The University of South Dakota project (Hurt 1960) was accomplished under a cooperative agreement with the National Park Service.

Fifteen parties or individuals conducted 22 field investigations in and/or near the project area under the auspices of eight different sponsoring arrangements. The principal investigator(s) or primary individual(s) is listed first, followed by the name of the sponsor, if any, the year(s) in which the on-the-ground phase of the investigation was conducted and, finally, the general type of investigation. They are:

W.H. Over--University of South Dakota Museum (USD)--1912-1946?--archeological
Waldo R. Wedel--Smithsonian Institution, River Basin Surveys (SIRBS)--1951--archeological
Missouri River Basin Investigations--BIA--1951--cemetery survey
Frank W. Calhoun; Edward H. Moorman--SIRBS--1951--archeological
Richard P. Wheeler--SIRBS--1953--archeological
Ray H. Mattison--NPS--1946-1952--historical
Waldo R. Wedel--SIRBS--1955--archeological
Waldo R. Wedel--SIRBS--1956--archeological
Wesley R. Hurt, Jr.--USD--1957--archeological
Harold A. Huscher--SIRBS--1957--archeological
Wesley R. Hurt, Jr.--USD--1959--archeological
K.V. Flannery and Warren W. Caldwell--SIRBS--1960--archeological
Carl R. Falk, Robert E. Pepperl and Mary E. McCormick--University of Nebraska-Lincoln (UNL)--1978--archeological
Joe Alan Artz--SDARC (for BIA)--1980--archeological
Timothy R. Nowak--USACE--1980--archeological
Timothy R. Nowak--USACE--1982--archeological
R. Peter Winham and Edward J. Lueck--Archeology Laboratory, Augustana College (AL)--1985-1986--archeological
R. Peter Winham, Kerry Lippincott and Edward Lueck--AL--1986--archeological
Kimball M. Banks--BIA--1987--archeological
William M. Kurtz--SDARC (for BIA)--1988--archeological
Edward Lueck, Kerry Lippincott and Peter Winham--AL--1988--archeological
Nicholas Chevance--BIA--1989--archeological

Those previously recorded sites which are inundated near the Dewey County project area are shown in Figure 5.

Figure 5. General plan of sites near (inundated) and in the project area.

Table 2. List of Areas Previously Surveyed In or Near the Dewey County Project Area, and Sites Previously Recorded Within Those Survey Areas (compiled from SDARC master maps and other sources).

Quadrangle Map	Section	Township	Range	1/4 1/4	Sites	Reference
No Heart Creek SW	17	10	28	SE1/4 SW1/4		Artz 1980 (IN and NEAR)
	20	10	28	NE1/4 NW1/4 & NW1/4 NE1/4 & SW1/4 NE1/4 & NW1/4 SE1/4		
Artichoke Butte NW	3	11	30	NW1/4 NW1/4		Banks 1987 (NEAR)
Artichoke Butte SW	33	11	30	SE1/4 NW1/4		Chevance 1989 (NEAR)
Patch Skin Buttes SW	4	12	30	NW1/4 NW1/4 & SW1/4 NW1/4 & SE1/4 NW1/4		Kurtz 1988 (IN)
	31	13	30	SE1/4 SE1/4 & NE1/4 SE1/4		
	32	13	30	SW1/4 NW1/4 & SW1/4 SW1/4		
Patch Skin Buttes SE	1	12	31	SW1/4		Owens 1982 (NEAR) (survey by Nowak)
	2	12	31	SE1/4		
Patch Skin Buttes SE	1?	12	31	(not given)	(99-455.7)	Owens 1980 (NEAR) (survey/salvage by Nowak)
	2	12	31	(not given)		

Table 3. Previously Recorded Sites Inundated Near the Dewey County Project Area (several non-inundated trails and earthen dams are also included).

Key No.	Site No.	Survey/Excavator	Report/Source	Quadrangle Map	Comments
1	39AR1/39AR6/ 39DW25	W.H. Over	Sigstad & Sigstad 1973:86-88	No Heart Creek SE	Rousseau's Village; Rouseau Site; Rousseau Village--fortified earthlodge village, 53 lodges
2	39AR2/ 39DW24	W.H. Over; Paul L. Cooper; Frank W. Calhoun; Richard P. Wheeler; Wesley R. Hurt	Caldwell 1966b:156; Hurt 1960, 1961:56, 1970: 169-215; Johnston & Hoffman 1966; Lehmer 1971:117, 120; Moerman & Jones 1966; Sigstad & Sigstad 1973:83, 85-86	No Heart Creek SW	No Heart Creek Site; No Heart Creek Village--fortified earthlodge village (Extended Coalescent [EC]), ca. 20 lodges
3	39AR3/ (39AR7?)	W.H. Over	Sigstad & Sigstad 1973:86	No Heart Creek SW	Prairie Chicken Creek Village - could be the same as 39AR7--occupational, probably earthlodge village
4	39AR4	Richard P. Wheeler	Site Form; Johnston & Hoffman 1966	No Heart Creek SW	Village; Former Indian Village Site--probably earthlodge village (EC)
5	39AR5	Paul L. Cooper (photo examination)	Site Form; Johnston & Hoffman 1966	No Heart Creek SE & No Heart Creek SW	Pearman Village--earthlodge village (EC)
	39AR6 (see 39AR1)				
6	39AR7	Edward H. Moorman; Richard P. Wheeler	Site Form; Johnston & Hoffman 1966	No Heart Creek SW	(also see Harold A. Huscher notes)--earthlodge occupational site (EC)
7	39AR8	Richard P. Wheeler; Harold A. Huscher	Site Form	Artichoke Butte SW	Alberts Creek Village--fortified earthlodge village (Extended Middle Missouri [EMM]), 15+ lodges
8	39AR201	Richard P. Wheeler; Warren W. Caldwell	Site Form; Caldwell 1966a; Thiessen 1977	No Heart Creek SE	McKensey Village; McKensy Village; McKensey Bottom--earthlodge village (EMM), 18 lodges

Table 3 (cont.)

Key No.	Site No.	Survey/Excavator	Report/Source	Quadrangle Map	Comments
9	39AR202	Harold A. Huscher	Site Form	No Heart Creek SE	"Roan Bear" (NRC 1894)--post-contact occupational and reservation period
10	39AR203	Harold A. Huscher	Site Form	Artichoke Butte SW	Unfortified earthlodge (EC); several depressions
11	39AR204	Harold A. Huscher	Site Form	Artichoke Butte SW	Unfortified earthlodge; depressions
12	39AR205	Harold A. Huscher	Site Form	Artichoke Butte NW	Probably village; depressions
13	39AR206	Harold A. Huscher	Site Form	Artichoke Butte NW	Probably village; shallow depressions
14	39AR207	Harold A. Huscher	Site Form; Johnston 1966	Artichoke Butte NW	Pascal Creek Site--earthlodge village (Post-Contact Coalescent [PCC])
15	39AR208	Harold A. Huscher (photo examination)	Site Form	No Heart Creek SE	Possible eartholdge village; 3 "circles"
16	39AR209	Harold A. Huscher (based on informant's account)	Site Form	Artichoke Butte NW	"La Loo Catt" Village--possible earthlodge village; "very late"
17	39AR210	K.V. Flannery and Warren W. Caldwell	Site Form; Caldwell 1966a	No Heart Creek SE	Fortified earthlodge village (EMM), 9+ lodges
18	39DW7	W.H. Over	Sigstad & Sigstad 1973; Cooper 1965; Lehmer 1971:117	Patch Skin Buttes SE	Cheyenne Agency Village--occupational
19	39DW10	J.J. Hoffman; Will 1924:304; J. Bauxar (photo examination)	Site Form	Patch Skin Buttes SW	Lahoocat Site (1797?)--historic Arikara village cited by Lewis and Clark (10-4-1804), 17 lodges
	39DW25/ (see 39AR1)				
20	39DW239	Harold A. Huscher	Site Form	Patch Skin Buttes SW	Stove Creek Site; Stove Creek Village--earthlodge village (PCC)

Table 3 (cont.)

Key No.	Site No.	Survey/Excavator	Report/Source	Quadrangle Map	Comments
21		USACE	USACE Map 1892	Patch Skin Buttes SE	Augustus Travessey (ca. SW1/4 SW1/4 NE1/4 Sec. 4, T12N, R31E) - 1 bldg.
22		USACE	USACE Map 1892	Patch Skin Buttes SE	ca. NE1/4 NW1/4 NE1/4 Sec. 5, T12N, R31E - 1 bldg.
23		Land Office	GLO Map 1900	Patch Skin Buttes SE	ca. SW1/4 SE1/4 NE1/4 Sec. 4, T12N, R31E - 1 bldg.
24		Land Office	GLO Map 1900	Patch Skin Buttes SE	ca. NE1/4 SW1/4 NE1/4 Sec. 4, T12N, R31E - 1 bldg.
25		Land Office	GLO Map 1900	Patch Skin Buttes SE	ca. SE1/4 NE1/4 NW1/4 Sec. 4, T12N, R31E - 1 bldg.
26		Land Office	GLO Map 1900	Patch Skin Buttes SE	ca. SE1/4 NW1/4 NW1/4 Sec. 4, T12N, R31E - 1 bldg.
27		USACE	USACE Maps 1892 & 1947	Patch Skin Buttes SW	ca. NE1/4 NE1/4 NE1/4 Sec. 6, T12N, R31E - 2 bldgs.
28		USACE	USACE Maps 1892 & 1947	Patch Skin Buttes SW	ca. NW1/4 NW1/4 NW1/4 Sec. 13, T12N, R30E - 2 bldgs.
29		USACE	USACE Map 1892	Patch Skin Buttes SW	Travessey (NW1/4 SE1/4 SE1/4 Sec. 11, T12N, R30E) - 1 bldg.
30		Land Office	GLO Map 1898?	Patch Skin Buttes SW	NW1/4 NE1/4 NE1/4 Sec. 14, T12N, R30E - 2 bldgs.
31		USACE; Land Office	USACE Maps 1892 & 1947; GLO Map 1900	Artichoke Butte NW	Jacob Garm (NW1/4 SE1/4 NE1/4 Sec. 2, T11N, R30E); Dick Dunn (GLO) - 4 bldgs. & 2 bldgs. (GLO)

Table 3 (cont.)

Key No.	Site No.	Survey/Excavator	Report/Source	Quadrangle Map	Comments
32		Land Office	GLO Map 1900	Artichoke Butte NW	NW1/4 SE1/4 SW1/4 Sec. 1, T11N, R30E (on "Dunn's Island") - 1 bldg.
33		Land Office	GLO Map 1900	Artichoke Butte NW	NE1/4 NW1/4 NW1/4 Sec. 13, T11N, R30E - 1 bldg.
34		Land Office (Apparent Inkspot - Voided)	GLO Map 1900	Artichoke Butte NW	SE1/4 SW1/4 SW1/4 Sec. 26, T11N, R30E - 1 bldg.?
35		Land Office	GLO Map 1900	Artichoke Butte SW	NW1/4 NW1/4 NW1/4 Sec. 6, T10N, R31E - 2 bldgs.
36		USACE; Land Office	USACE 1892; GLO Map 1900	Artichoke Butte SW	Poor Dog (Indian) (NE1/4 SE1/4 SW1/4 Sec. 1, T10N, R30E) - 1 bldg.
37		USACE	USACE 1892	Artichoke Butte SW	NW1/4 SE1/4 SW1/4 Sec. 1, T10N, R30E - 1 grave
38		Land Office	GLO Map 1900	Artichoke Butte SW	Peter Aspand (SW1/4 NE1/4 SE1/4 Sec. 10, T10N, R30E) - 1 bldg.
39		Land Office	GLO Map 1900	Artichoke Butte SW	NW1/4 NE1/4 NE1/4 Sec. 15, T10N, R30E - 2 bldgs.
40		USACE; BIA	USACE 1892; BIA 1951	Artichoke Butte SW	SW1/4 NW1/4 NW1/4 Sec. 15, T10N, R30E - 1 cemetery (Miner family)
41		USACE; Land Office	USACE 1892; GLO Map 1900	Artichoke Butte SW	Ted Miner (NE1/4 SW1/4 NW1/4 Sec. 15, T10N, R30E) - 1 bldg.
42		USACE	USACE 1892	Artichoke Butte SW	ca. SW1/4 SW1/4 NE1/4 Sec. 16, T10N, R30E - 1 bldg.
43		SIRBS	39AR203 Site Form 9-25-57	Artichoke Butte SW	Mann, Son of the Man (SE1/4 SE1/4 NW1/4 Sec. 16, T10N, R30E) - 1 bldg.

Table 3 (cont.)

Key No.	Site No.	Survey/Excavator	Report/Source	Quadrangle Map	Comments
44		Land Office	GLO Map 1900	Artichoke Butte SW	NE1/4 NE1/4 SW1/4 Sec. 20, T10N, R30E - 1 bldg.
45		Land Office	GLO Map 1900	Artichoke Butte SW	H. Fishbeck (NW1/4 NW1/4 NE1/4 Sec. 29, T10N, R30E) - on Plum Island - 1 bldg.
46		Land Office	GLO Map 1900	No Heart Creek SE	Thomas Whitehorse (NW1/4 SW1/4 NW1/4 Sec. 17 & NE1/4 SE1/4 NE1/4 Sec. 18, T10N, R30E) - 2 bldgs.
47		Land Office	GLO Map 1900	No Heart Creek SE	NW1/4 NW1/4 SW1/4 Sec. 17, T10N, R30E - 1 bldg.
48		USACE	USACE 1892	No Heart Creek SE	Roan Bear (Indian) (NW1/4 SE1/4 NW1/4 Sec. 20, T10N, R30E) - 4 bldgs.
49		USACE	USACE 1892	No Heart Creek SE	SW1/4 NE1/4 SW1/4 Sec. 31, T10N, R30E - 1 bldg.?
50		Land Office	GLO Map 1900	No Heart Creek SE	Dolphus (SW1/4 NE1/4 SW1/4 Sec. 2, T9N, R29E) - 1 bldg.
51		USACE	USACE 1892	No Heart Creek SE	SW1/4 SE1/4 NW1/4 Sec. 3, T9N, R29E - 2 bldgs.
52		USACE	USACE 1947	No Heart Creek SE	SW1/4 NE1/4 NW1/4 & SE1/4 NW1/4 NW1/4 Sec. 4, T9N, R29E - 2 bldgs.
53		USACE	USACE 1892; USACE 1947	No Heart Creek SE	J.G. Pearman (N1/2 SE1/4 SW1/4 Sec. 29, T10N, R29E) - no name on 1947 map - 4 bldgs.; 2 bldgs. & 1 watertank

Table 3 (cont.)

Key No.	Site No.	Survey/Excavator	Report/Source	Quadrangle Map	Comments
54		Land Office	GLO Map 1900	No Heart Creek SE	SE1/4 SW1/4 Sec. 29 & NE1/4 NE1/4 NW1/4 & NW1/4 NW1/4 NE1/4 Sec. 32, T10N, R30E - 4 bldgs. (may include some of the bldgs. above)
55		USACE	USACE 1892	No Heart Creek SE	Bazil Claymore (SW1/4 NW1/4 NE1/4 Sec. 32, T10N, R30E) - 1 bldg.
56		USACE	USACE 1947	No Heart Creek SE	SE1/4 SE1/4 NE1/4 Sec. 32, T10N, R30E - 1 bldg.
57		USACE	USACE 1892	No Heart Creek SE	SE1/4 SW1/4 NE1/4 Sec. 32, T10N, R30E - 1 bldg.
58		Land Office	GLO Map 1900	No Heart Creek SW	NW1/4 SW1/4 NW1/4 Sec. 18, T10N, R29E and NE1/4 SE1/4 NE1/4 Sec. 13, T10N, R28E - 1 bldg.
59		Land Office	GLO Map 1900	No Heart Creek SW	Church (SW1/4 SW1/4 Sec. 18, T10N, R29E) - 1 church and 3 bldgs.
60		USACE; BIA 1951?	USACE 1892; BIA 1951	No Heart Creek SW	Indian Cemetery (SW1/4 SW1/4 SW1/4 Sec. 18, T10N, R29E) - possibly the same as the cemetery described as being in the SW1/4 NW1/4 SW1/4, as St. Paul's Episcopal Cemetery (51 burials)
61		Land Office	GLO Map 1900	No Heart Creek SW	NW1/4 SE1/4 SE1/4 Sec. 18, T10N, R29E - 1 bldg.
62		Land Office	GLO Map 1900	No Heart Creek SW	N1/2 NW1/4 NW1/4 Sec. 19, T10N, R29E - 2 bldgs.
63		USACE	USACE 1892	No Heart Creek SW	NE1/4 SE1/4 NW1/4 Sec. 19, T10N, R29E - 1 bldg.

Table 3 (cont.)

Key No.	Site No.	Survey/Excavator	Report/Source	Quadrangle Map	Comments
64		USACE	USACE 1892 & 1947; GLO Map 1900	No Heart Creek SW	E1/2 SW1/4 SE1/4 & W1/2 SE1/4 SE1/4 Sec. 19, T10N, R29E - 3 bldgs. (1892); 1 bldg. (1900); 9 bldgs. (1947)
65		Land Office	GLO Map 1900	No Heart Creek SW	SW1/4 NW1/4 SW1/4 Sec. 20, T10N, R29E - 1 bldg.
66		USACE	USACE 1892	No Heart Creek SW	SW1/4 SW1/4 NW1/4 Sec. 29, T10N, R29E - 1 bldg.
67		Land Office	GLO Map 1900	No Heart Creek SW	Pearman (NW1/4 NW1/4 SW1/4 Sec. 29, T10N, R29E) - 2 bldgs.
68		USACE	USACE 1892	No Heart Creek SW	NE1/4 SE1/4 NE1/4 Sec. 30, T10N, R29E - 1 bldg.
69		USACE	USACE 1892	No Heart Creek SW	SE1/4 NE1/4 SE1/4 Sec. 13, T10N, R28E - 1 bldg.
70		USACE	USACE 1892	No Heart Creek SW	NE1/4 SE1/4 SE1/4 Sec. 13, T10N, R28E - 1 bldg.
71		USACE	USACE 1892	No Heart Creek SW	NW1/4 SE1/4 SE1/4 Sec. 13, T10N, R28E - 1 bldg.
72		USACE	USACE 1892	No Heart Creek SW	NE1/4 SW1/4 NE1/4 Sec. 13, T10N, R28E - 1 bldg.?
73		USACE	USACE 1892	No Heart Creek SW	SE1/4 NW1/4 NW1/4 Sec. 13, T10N, R28E - 1 bldg.?
74		USACE	USACE 1892	No Heart Creek SW	John Kitto (NE1/4 SE1/4 NE1/4 Sec. 24, T10N, R28E) - 1 bldg.
75		USACE	USACE 1892	No Heart Creek SW	SE1/4 NW1/4 SE1/4 Sec. 11, T10N, R28E - 1 bldg.

Table 3 (cont.)

Key No.	Site No.	Survey/Excavator	Report/Source	Quadrangle Map	Comments
76		Land Office	GLO Map 1900	No Heart Creek SW	Boss Farmer (SW1/4 NW1/4 SE1/4 & NW1/4 SW1/4 SE1/4 Sec. 11, T10N, R28E) - 2 bldgs.
77		USACE	USACE 1892	No Heart Creek SW	Cemetery (NW1/4 SW1/4 SW1/4 Sec. 11, T10N, R28E)
78		USACE	USACE 1947	No Heart Creek SW	NW1/4 SW1/4 SW1/4 Sec. 11, T10N, R28E - 2 bldgs.
79		Land Office	GLO Map 1900	No Heart Creek SW	NW1/4 SE1/4 SE1/4 Sec. 10, T10N, R28E - 3 bldgs.
80		USACE; Land Office	USACE 1892, 1947; GLO Map 1900	No Heart Creek SW	C. Claymore (SW1/4 SE1/4 SW1/4 Sec. 10, T10N, R28E) - 3 bldgs. (1892); 3 bldgs. (1900); 2 bldgs. (1947)
81		Land Office	GLO Map 1900	No Heart Creek SW	NE1/4 NW1/4 NW1/4 Sec. 15, T10N, R28E - 1 bldg.
82		USACE	USACE 1947	No Heart Creek SW	NE1/4 NE1/4 SE1/4 Sec. 20, T10N, R28E - 1 bldg.
83 NOT IN-UNDATED		Land Office	GLO Map 1900	Charlie Creek & No Heart Creek	W1/2 & SW1/4 SW1/4 Sec. 19, & W1/2 NW1/4 and NE1/4 SW1/4 Sec. 29, & N1/2 NE1/4 Sec. 30, & E1/2 NW1/4 & SE1/4 SE1/4 Sec. 32, T11N, R28E - trail
84 NOT IN-UNDATED		Land Office	GLO Map 1900	No Heart Creek NE & No Heart Creek SE	SE1/4 Sec. 24, & NW1/4 NE1/4 & W1/2 Sec. 25, T11N, R29E, & NW1/4 & W1/2 SE1/4 Sec. 36, T10N, R29E - 2 branches of a trail

Table 3 (cont.)

Key No.	Site No.	Survey/Excavator	Report/Source	Quadrangle Map	Comments
85 NOT IN-UNDATED		Land Office	GLO Map 1900	No Heart Creek SW	NE1/4 Sec. 2, T10N, R28E - trail
86	422.5	Mattison	Mattison 1954	No Heart Creek SE	Valle (or Valles) Trading Post
87	422.6	Mattison	Mattison 1954	No Heart Creek SE	Lewis & Clark Campsite (10-1-1804)
88	427.4	Mattison	Mattison 1954	No Heart Creek SE	Lewis & Clark Campsite (8-24-1806)
89	429	Mattison	Mattison 1954; Year 1981	Artichoke Butte SW	Fairbank (1883-1924)--Ghost town (Lower and Upper Fairbank)
90	429.9	Mattison	Mattison 1954	Artichoke Butte SW	Bloody Run Gulch; Bloody Run Creek--(mouth of...)
91	430	Mattison	Mattison 1954	Artichoke Butte SW	Fishermans Island; Plum Island
92	435	Mattison	Mattison 1954	Artichoke Butte SW	Lewis & Clark Campsite (10-2-1804)
93	441.4	Mattison	Mattison 1954	Artichoke Butte NW	Lewis & Clark Campsite (10-3-1804) -- ("...matter of conjecture...")
94	443.5	Mattison	Mattison 1954	Artichoke Butte NW	Pascal Island; Paschal Island
95	451	Mattison	Mattison 1954	Patch Skin Buttes SW	Lafferty Island; Dolphees Island; Lahoocat Island
96	452	Mattison	Mattison 1954	Patch Skin Buttes SW	Lewis & Clark Campsite (10-4-1804)
97	455	Mattison	Mattison 1954	Patch Skin Buttes SE	Lewis & Clark Campsite (8-23-1806)

Table 3 (cont.)

Key No.	Site No.	Survey/Excavator	Report/Source	Quadrangle Map	Comments
98	455.6	Mattison	Mattison 1954	Patch Skin Buttes SE	St. Johns Chapel (or Church) and Rectory (1885-); bldgs. were moved from near Old Fort Bennett in 1891 with the move of the Agency to this location
99	455.7	Mattison; BIA	BIA 1951; Mattison 1954; USACE 1947	Patch Skin Buttes SE	Cheyenne River Indian Agency (1891-); ca. 87 bldgs. & 2 cemeteries shown on 1947 USACE map. Buildings here were moved from near Old Fort Bennett in 1891 with the move of the Agency to this location and included several warehouses and several residences; part of the eastern cemetery (395 burials) apparently could still be above the high pool level; the western cemetery (283 burials) may be the one identified (in BIA 1951) as being in the approximate center of the SW1/4 SW1/4 of Sec. 2, T12N, R31E
100	456	Mattison	Mattison 1954	Patch Skin Buttes SE	Forest City (1890-?)--originally known as Forest City South - ghost town
101 NOT IN-UNDATED		USACE	USACE 1947	Patch Skin Buttes SW	SE1/4 NW1/4 SE1/4 Sec. 32, T13N, R30E - earthen dam

Table 3 (cont.)

Key No.	Site No.	Survey/Excavator	Report/Source	Quadrangle Map	Comments
102 NOT IN-UNDATED		USACE	USACE 1947	Patch Skin Buttes SW	SE1/4 NW1/4 NW1/4 Sec. 2, T12N, R30E - earthen dam
103 NOT IN-UNDATED		USACE	USACE 1947	Patch Skin Buttes SW	NE1/4 NE1/4 SW1/4 Sec. 2, T12N, R30E - earthen dam
104		USACE	USACE 1947	Patch Skin Buttes SW	NE1/4 SE1/4 NW1/4 Sec. 3, T12N, R30E - earthen dam
105		USACE	USACE 1947	Patch Skin Buttes SW	SW1/4 SW1/4 SW1/4 Sec. 6, T12N, R31E - Ford (to Dolphees/Lafferty Is.)
106		USACE	USACE 1947	Rousseau Creek	SE1/4 NE1/4 SW1/4 Sec. 31, T11N, R28E - earthen dam ("Falls")
107		USACE	USACE 1947	Rousseau Creek	SW1/4 SW1/4 SE1/4 Sec. 31, T11N, R28E - earthen dam ("Falls")
108		USACE	USACE 1947	Rousseau Creek	NE1/4 NW1/4 NE1/4 Sec. 6, T10N, R28E - 2 earthen dams ("Falls")
109 NOT IN-UNDATED		USACE	USACE 1947	Rousseau Creek	SW1/4 NW1/4 NE1/4 & NW1/4 SW1/4 NE1/4 Sec. 6, T10N, R28E - 2 earthen dams ("Falls")
110		BIA	BIA 1951	Artichoke Butte SW	SE corner of Sec. 36, T11N, R30E - 1 burial (Sheppard? family)

Table 4. List of Reports On Surveys Conducted In and Near the Dewey County Project Area.

Author	Date of Report	Contractor/ Sponsoring Agency	Date of Survey/ Excavations
W.H. Over (Sigstad and Sigstad eds.)	1973	USD Museum	1912-1946?
Ray H. Mattison	1954	NPS	1946-1952
Wesley R. Hurt	1970	USD	1959
Warren W. Caldwell	1966a	SIRBS	1960
Carl R. Falk, Robert E. Pepperl and Mary E. McCormick	1986	UNL	1978
Joe Alan Artz	1980	SDARC	1980
R. Peter Winham and Edward J. Lueck	1987	AL	1985-1986
R. Peter Winham, Kerry Lippincott and Edward J. Lueck	1988	AL	1986
Kimball M. Banks	1987	BIA	1987
William M. Kurtz	1988	SDARC	1987-1988
Edward J. Lueck, Kerry Lippincott and R. Peter Winham	1989	AL	1988
Nicholas Chevance	1989	BIA	1989

Informant Interviews

No informants were identified prior to the field investigations. Phyllis Wise, Potter County Historical Museum, said that no prehistoric materials were housed in the museum (personal communication, March 1992).

Previous Investigations

William H. Over accomplished the earliest archeological investigations in the current study area. From ca. 1912-1946, Over, working both independently and under the auspices of the University of South Dakota Museum, conducted surveys along the Missouri River as well as in many other areas of South Dakota. His records document four sites inundated near the project area: Rousseau's Village (39AR1/39AR6/39DW25), No Heart Creek site (39AR2/39DW24), Prairie Chicken Creek Village (39AR3/39AR7?) and Cheyenne Agency Village (39DW7). Over's records, including the descriptions of many other sites, have been revised and reproduced in Sigstad and Sigstad (1973). His original records were consulted by personnel involved with the later Smithsonian Institution River Basin Surveys program (see Wedel 1953a:27).

During the period covering W.H. Over's work, George F. Will and Thaddeus C. Hecker also investigated archeological sites along the Missouri River. Although most of their work took place in North Dakota, Will's initial report (1924) tabulated a number of sites in the vicinity of the Grand and Moreau rivers (ca. 19-37 miles north of the project area), including a village of 60 lodges located near the mouth of the Moreau River. The latter lodges may correlate with sites 39DW216 and 39DW217 (Will 1924:310). Will's list was based on the accounts of Lewis and Clark and sites plotted on the 1894 Missouri River Commission topographic maps; these maps are similar to the 1892 USACE maps. The maps show the No Heart Creek site (39AR2/39DW24) as well as the Cheyenne River site (39ST1), which is located just below the project area near the mouth of the Cheyenne River.

With the Flood Control Act of 1944 came the initiation of the Smithsonian Institution River Basin Surveys. These surveys were part of a larger effort to locate and salvage information from important archeological sites to be impacted or destroyed by construction of flood control and electricity-generating dam/reservoir systems. The earliest well-documented sites identified near the project area which can be readily confirmed are those recorded by the SIRBS from 1946-1960. Some of the SIRBS sites were first identified from 1938 aerial photographs (Paul L. Cooper 1949 [39AR5] and 1951 [39AR2] and Richard P. Wheeler 1954 [39AR8]), and from Over's and Lewis and Clark's records (J. Bauxar in 1946 [39AR1, 39AR3] and 1947 [39DW10]; Cooper in 1951 [39AR2]; and Jake J. Hoffman in 1968 [39DW10]). The first major SIRBS field investigations of sites (now-inundated) near the project area began in 1951 when Frank W. Calhoun worked at 39AR2 and Edward H. Moorman at 39AR7. Subsequent investigations took place in 1953 (Wheeler at 39AR2, 39AR4, 39AR6/39AR1/39DW25, 39AR7, and 39AR201); in 1957 (Harold A. Huscher at 39AR8, 39AR202, 39AR203, 39AR204, 39AR205, 39AR206, 39AR207, 39AR208 and 39DW239); and in 1960 (K.V. Flannery and Warren W. Caldwell at 39AR201 and 39AR210).

In addition to the SIRBS projects, the National Park Service encouraged and funded some institution-initiated projects, resulting in a number of major excavations being undertaken in the early 1950s. Wesley R. Hurt, Jr. (under the auspices of the USD Museum) directed excavations at the No Heart Creek site (39AR2/39DW24) in 1959 (Hurt 1960; Lehmer 1971). Warren W. Caldwell (SIRBS) conducted extensive excavations at 39AR201 in 1960 (Caldwell 1966a:4-38), as well as limited tests at 39AR210. Final reports have been produced of Hurt's work at 39AR2 (Hurt 1970:169-215) and Caldwell's excavations at 39AR210 (Caldwell 1966a). Lehmer (1971:194) lists 39AR2/39DW24 as the only site in the immediate vicinity of the project area which has been subjected to extensive excavations (Lehmer 1971:194). Several other sites within a few miles of the project area saw major SIRBS excavations, including the Cheyenne River site (39ST1) (by Waldo R. Wedel in 1951, 1955 and 1956); the Fay Tolton site (39ST11) (by Wheeler in

1953 and Donald D. Hartle in 1957) (see Wood 1976:2); the Rosa site (39PO3) (by Hurt in 1957); and the Hosterman site (39PO7) (by Carl F. Miller in 1956). Final reports have been produced for the Rosa site (Hurt 1959), the Hosterman site (Miller 1964) and the Fay Tolton site (Wood 1976).

In addition to the projects mentioned above, a survey of the area on the west side of the river between the Oahe Dam site and the Cheyenne River was accomplished by a party of two to six SIRBS investigators (Cooper 1965:4). In 1949, Cooper and C.W. Gavitt identified several depressions and a low mound at site 39SL15, located within the Little Bend Recreation Area across the river from the present project area. The SIRBS investigations, based in part on Over's earlier work, appear to account for any sites recorded across the river in Potter and Sully counties, with the exception of those recorded more recently by UNL (Falk et al. 1986).

The SIRBS investigations on the upper Missouri River were carried out with limited time and finances, and perhaps understandably focused on large earthlodge village sites. These sites were more prominent and likely to produce large amounts of information per effort expended. The SIRBS projects concentrated on sites likely to be impacted by the reservoir, or those located at or below the high flood pool level. One result of those limitations is that none of the sites recorded or excavated by the SIRBS are encompassed by the current project area.

An extensive literature search and seven field trips were accomplished by Ray H. Mattison and Merrill J. Mattes in the period 1946-1952 to identify historical aspects of the Oahe Reservoir. Mattison and Mattes were historians for the Region Two Office, National Park Service. Their literature searches and surveys involved several months of intensive research on original and secondary materials contained in libraries in Pierre, South Dakota; Lincoln and Omaha, Nebraska; Bismarck, North Dakota; and Washington, D.C. A report on the historic sites in the area was prepared by Mattison (1954), who describes 15 'sites' (without trinomial site numbers--Key Nos. 86-100, Table 3) which are inundated near the project area, including six campsites of the Lewis and Clark expedition, the mouth of Bloody Run Creek, and three islands. While Mattison's search and survey represent an intensive effort, he does not provide an evaluation of one of the common site types known from nearby areas, i.e., occupation and use sites associated with the Reservation period and Euro-American settlement of the area. None of the latter site types was identified during the current on-the-ground survey, although a number of these sites are inundated nearby.

There is a hiatus of archeological activity in and near the project area until the late 1970s. From 1980 to the present time, five small-scale surveys have been carried out; these investigations were directed at cultural resource clearance for several small development projects. In this same period, four large-scale surveys were conducted along the Missouri River within approximately 30 miles of the present project area (see Falk et al. 1986; Lueck et al. 1989; Winham and Lueck 1987; Winham et al. 1988). Several small-scale salvage or testing projects were also accomplished (Owens 1980; Winham and Lueck 1983).

A brief description of the small-scale surveys undertaken in and near the project area follows. Most of the relevant data may be found in Table 2; no cultural materials were identified by any of the surveys. Artz (1980) surveyed approximately 165 acres for the West River Aqueduct project; about 55 of those acres were in the current project area. In 1982, Nowak conducted an in-house archeological survey for the USACE of about 20 acres in the Forest City Recreation Area, located in the SW1/4 of Section 1 and the SE1/4 of Section 2, T12N, R31E (Owens 1982). Banks (1987) surveyed the Clement stock dam, which lies about 1.25 miles west of the project area; ca. 5 acres were investigated. Kurtz (1988) surveyed the Armstrong County Road which passes through the project area along Stove Creek and Scatter Butte Creek; this survey of a 300-foot wide right-of-way covered approximately 32.5 acres in the current project area. Chevance (1989) surveyed the Mary Kaye Gesinger Stock Dam, a ca. 7 acre area about a half-mile east of Bull Creek and about 1/4 mile outside of the project area.

Four extensive, or intensive, examinations of USACE lands in nearby areas have been undertaken by several groups. In 1978, the Division of Archeological Research, Department of Anthropology, University of Nebraska-Lincoln, conducted a large-scale survey of USACE lands on the east bank of the Oahe Reservoir in South Dakota (Falk et al. 1986). The Archeology Laboratory of Augustana College has completed three large-scale archeological surveys of USACE lands in surrounding areas. A 1985-1986 survey in Dewey and Stanley counties examined lands ca. 22-25 miles north and 3-21 miles south of the present project area (Winham and Lueck 1987). USACE lands just south and west of the current project area along the Cheyenne Arm of Lake Oahe in Dewey, Haakon, Stanley and Ziebach counties were also investigated (Winham et al. 1988), as well as USACE lands in Dewey County between the present project area and the Moreau River (Lueck et al. 1989).

Two other archeological projects of note have been conducted in the vicinity. In 1980, Timothy R. Nowak, then South Dakota area archeologist for the USACE, salvaged several burials from the Corpus Christi Catholic Cemetery, inundated just south of the Forest City Recreation Area (Owens 1980). Several years later, the Archeology Laboratory, Augustana College (AL) accomplished small-scale excavations at site 39PO30, located in the West Whitlocks Recreation Area about 2 miles northeast of the project area, and at site 39SL15, located in the Little Bend Recreation Area across the river from the present project area (Winham and Lueck 1983).

Quality of Previous Work

In considering the adequacy of past work in the study area, it should be noted that the majority of the newly-recorded sites are situated above the area most intensively examined by the SIRBS, the only major previous survey in the immediate vicinity. The SIRBS work focused on sites at and below the projected high flood pool level. This focus was due primarily to limited time and money. The 1948 and 1949 seasons were virtually lost because of inadequate funding (Wedel 1953a:3; 1953b:67). The SIRBS work focused on large, well-preserved and well-represented sites, which are generally associated with relatively late groups who lived in fixed villages (Lehmer 1971:61; Wood 1974:5). More obscure sites with sparse remains--prehistoric short term occupation sites and Historic Reservation period and early settlement sites--were recorded in a more cursory manner, if at all.

The problem with inadequate funding is sometimes reflected in the lack of completed and/or published final reports for major excavations in the region. However, the Cheyenne River site (39ST1) is the only excavated site in the immediate vicinity for which a final report has not been completed. According to Lehmer (1971), major excavations were conducted at four other sites located near the current project area. Final reports are available for: the No Heart Creek site (39AR2)(Hurt 1970), the Fay Tolton site (39ST11) (see Wood 1976:2), the Rosa site (39PO3) (Hurt 1959), and the Hosterman site (39PO7/39PO5) (Miller 1964). Also note the report for excavations at sites 39AR201 and 39AR210 (see Caldwell 1966a).

In light of the above comments, it may be useful to list several synthetic works pertinent to the region. These are Lehmer's (1971) Middle Missouri Archeology; Memoir 13 of Plains Anthropologist, edited by Wood (1977); Ceramic Classification in the Middle Missouri Subarea of the Plains by C. Johnson (1980); Anthropology on the Great Plains, edited by Wood and Liberty (1980); Missouri National Recreational River: Native American Cultural Resources by Ludwickson et al. (1981); and Memoir 17 of Plains Anthropologist, edited by Jantz and Ubelaker (1981). Reviews of several of these works are also available in Wedel (1973), Howard (1981) and Smith (1982).

Summary

In summary, most of the previously recorded sites in the project area have been defined on the basis of surface manifestations. The previous investigations in the project area can be viewed as comprising two general types:

1) Those which were limited to a cursory examination of certain areas. This refers primarily to SIRBS investigations, which focused primarily on areas within the high flood pool area. SIRBS work was largely centered around inundated areas which are outside of the current project area.

2) Those which intensively focused on a site or on a relatively small survey area. This category includes the intensive excavations at the No Heart Creek Site (39AR2/ 39DW24) and all of the small-scale surveys (Artz 1980; Kurtz 1988).

The following chapter provides a brief overview of the prehistory and history of the project area. The descriptions given for each period are provided as generalized 'markers' rather than as a complete inventory of the factors used in defining a cultural period.

5. CULTURE HISTORY OVERVIEW

The following discussion provides an overview of the prehistory and history of the project area, integrating a broad, general review, based on such sources as Lehmer (1971) and Hannus et al. (1982), with project-specific data based on the results of this survey, on more regionally-based studies (e.g., Caldwell 1966b; Lueck et al. 1989; Winham and Lueck 1987; Wood 1965), and on site-specific evaluations (e.g., Toom 1991). The focus of this overview is the Oahe region of the Middle Missouri subarea of the Northern Plains (Figures 6 and 7). This section borrows heavily from overviews in Lueck, Lippincott and Winham (1989); Winham and Lueck (1987); and Winham, Nowak and Butterbrodt (1984).

The published chronological model for the Northern Plains region (Hannus et al. 1982:Figure 25.1) presented in Figure 8 is broadly applied in the following discussion of the culture history of the study area. However, this chronology was based on data derived from other regions and insufficient data have been generated from the present study area to allow more than a general comment on its relevance, or lack of relevance, to the current study area.

The Middle Missouri subarea has long been a focal point for human occupation and exploitation of the Northern Plains, supporting a diverse resource base and providing a major transportation artery along the Missouri River valley. Identified archeological sites in the subarea represent six major, often overlapping, periods: 1) the Paleoindian period (10,000-6,000 B.C.), 2) the Plains Archaic or Foraging period (6,000-0 B.C.), 3) the Plains Woodland period (A.D. 1-900), 4) the Plains Village period (A.D. 900-1862), 5) the Early Historic period (A.D. 1700-1860), and 6) the Late Historic period (A.D. 1860-present).

Paleoindian Period (10,000-6,000 B.C.)

The earliest occupation/peopling of the Northern Plains is dated at around 9500 B.C. with the beginning of the Paleoindian tradition. This tradition is characterized by a variety of hunting and gathering strategies, but the emphasis is placed on big game as the staple within the subsistence strategies. Within this tradition, seven complexes are recognized, differing in part with regard to projectile point stylistics. These complexes include Clovis, Goshen, Folsom, Hell Gap-Agate Basin, Cody, Plainview, and Parallel Oblique Flaked.

Knowledge of the Paleoindian period is derived primarily from kill/butchering sites and small ephemeral encampments scattered throughout the High Plains where the implements of nomadic hunters have been found in association with the bones of mammoth and extinct forms of bison. Technologically, the period is characterized and partially-defined by its most representative artifacts, the fluted and unfluted lanceolate projectile points and knife forms. The variability in point types and their wide distribution over the Plains suggest a highly mobile lifestyle (Frison 1978; Irwin and Wormington 1970; Irwin-Williams et al. 1973; Wormington 1957).

This period is, as yet, very poorly-represented in the Middle Missouri subarea with the exception of the Walth Bay (39WW203), Travis 2 (39WW15) and Moe (32MN101) sites. The Walth Bay and Travis 2 sites, located near Mobridge, both contained Agate Basin-like points (Ahler et al. 1974; Ahler et al. 1977), while the Moe site, located in North Dakota, contained Clovis points (Schneider 1975). It was previously thought that the Medicine Crow site (39BF2), located near Ft. Thompson, contained a Paleoindian component (Irving n.d.), but recent work with the assemblage indicates that its occupation probably did not begin until the Early Plains Archaic period (Ahler 1989).

Although the paucity of such sites suggests limited utilization of the Middle Missouri Trench by Paleoindian groups, it is also possible that many of these very early sites were destroyed or deeply-buried during the formation of the Missouri (Brakenridge and McCready 1988:452). To date, the most completely investigated Paleoindian site in South

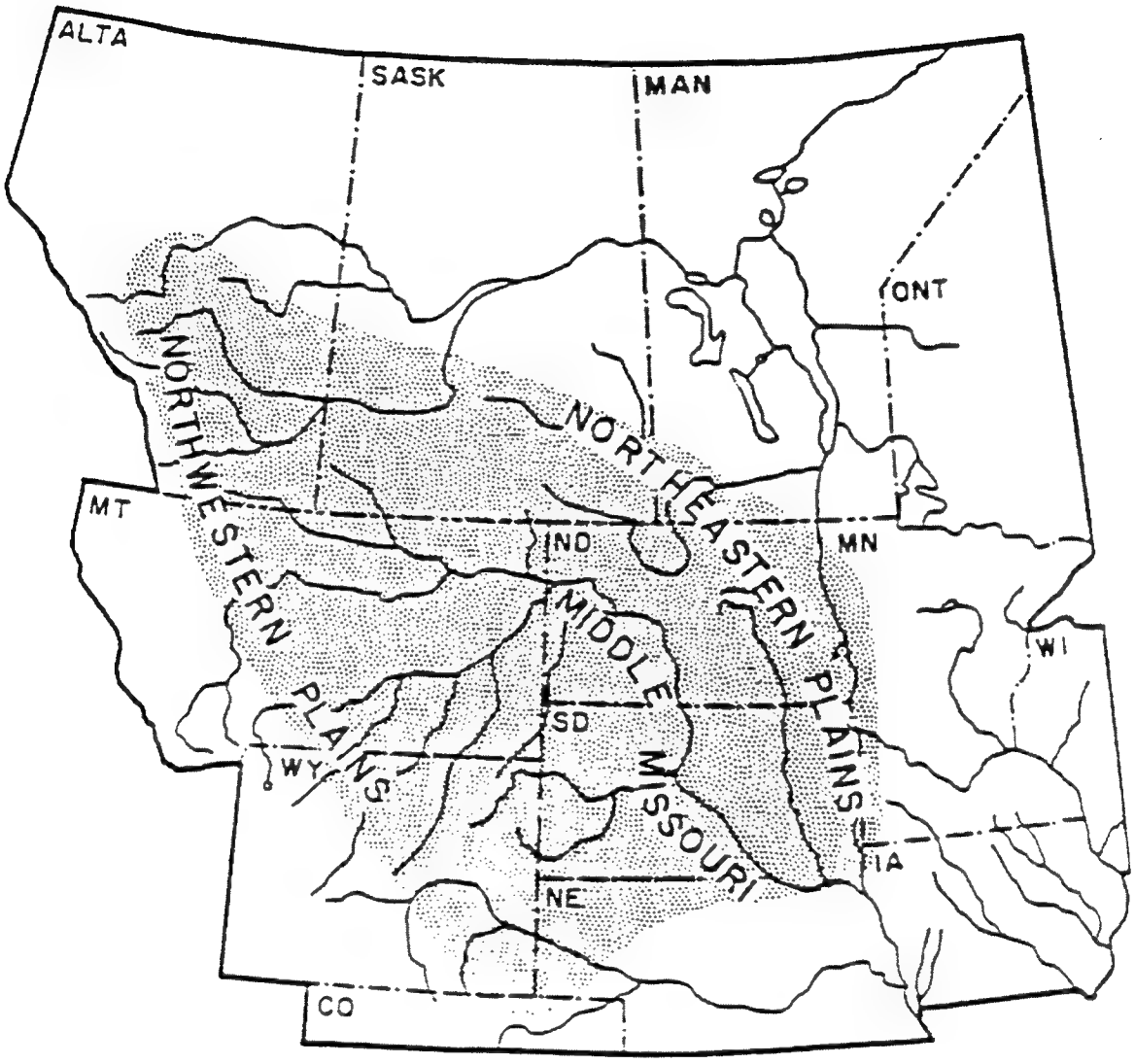


Figure 6. Subareas of the Northern Plains, combining terminology from Griffin (1952), Lehmer (1971:28-29), Lehmer and Caldwell (1966:512), and Wedel (1961:23) [from Gregg 1983:Figure 6.1].

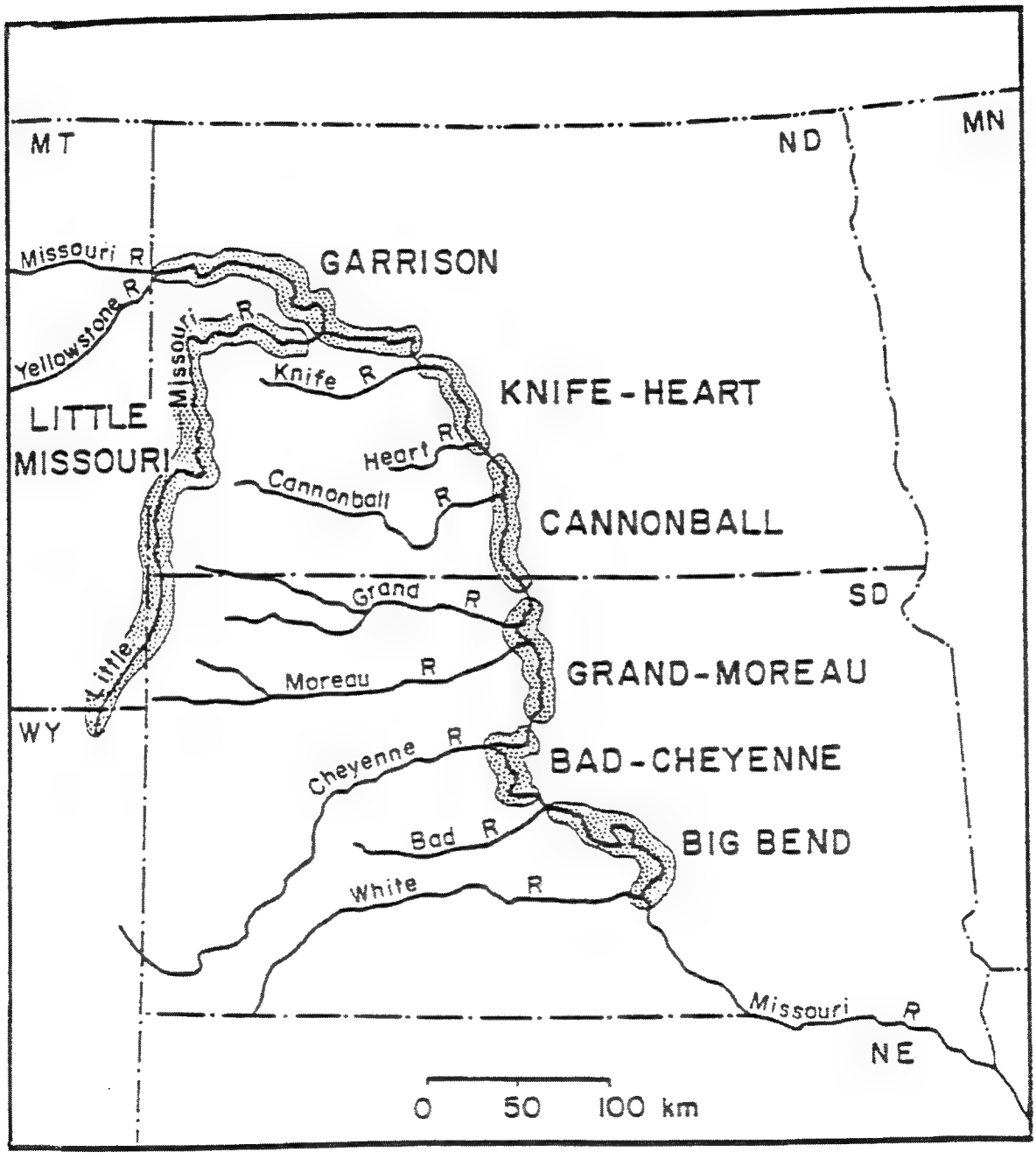


Figure 7. Regions of the Middle Missouri Subarea, from Lehmer (1971:29) and the Little Missouri Region of the Northwestern Plains Subarea, from Loendorf et al. (1982) [from Gregg 1983:Figure 6.2].

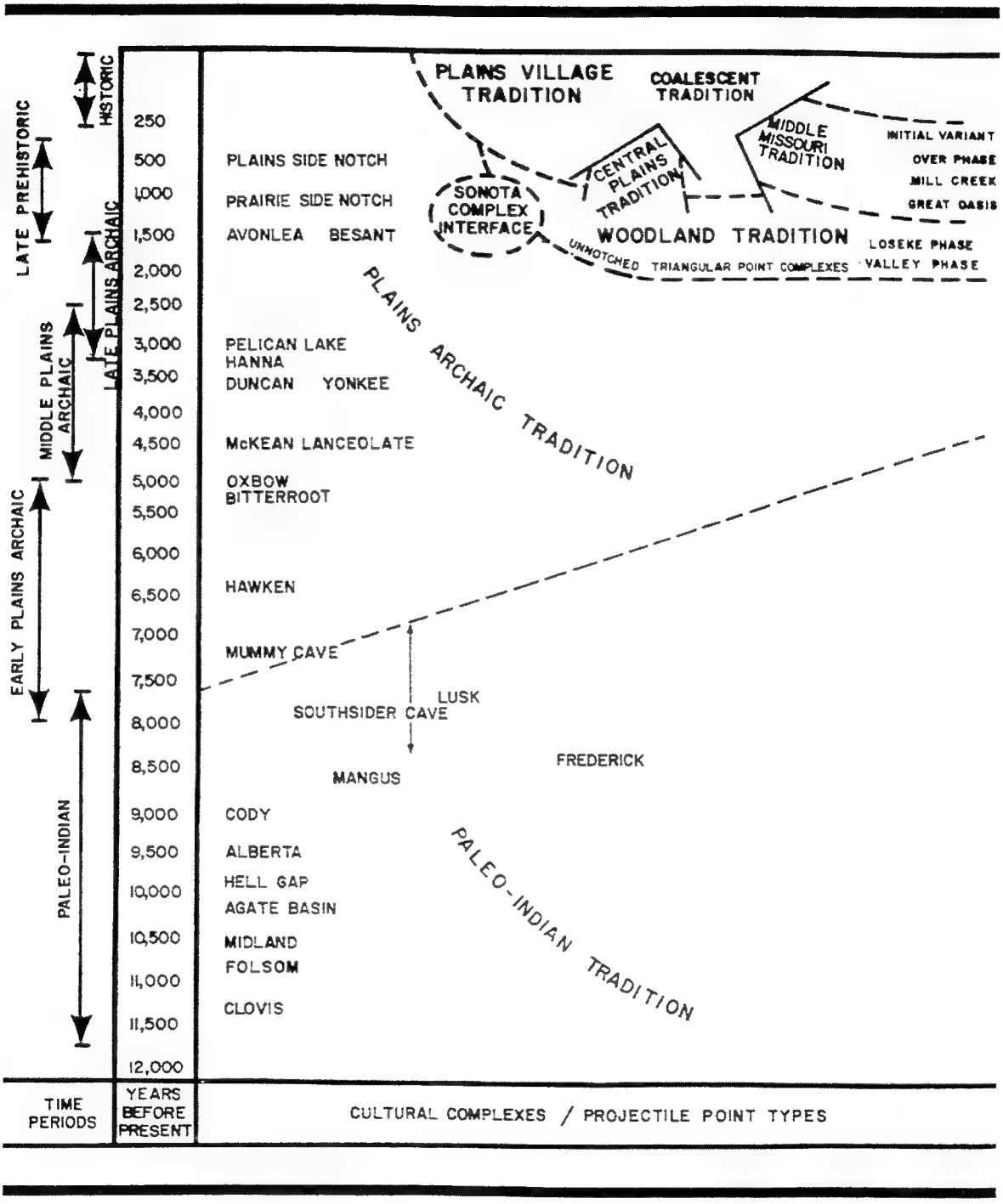


Figure 8. Chronological model for the Northern Plains depicting named archeological units with components known or anticipated in western and central South Dakota [from Hannus et al. 1982:Figure 25.1].

Dakota is the Lange/Ferguson site (39SH33), a Clovis-age mammoth butchering locale in the White River Badlands (Hannus 1985).

Plains Archaic Period (6,000-0 B.C.)

Around 5500 B.C., a transition in subsistence economies occurs with a shift from the Paleoindian emphasis on big game to the Plains Archaic exploitation of a more diversified resource base. However, there are regional variations in the extent and emphasis of the changes based on the different potentials of the local environments. In general it is the transition from Pleistocene to essentially modern flora and fauna that marks the change in subsistence strategies. It has been noted that "the majority of the Pleistocene megafauna living in herds...became extinct about 8000 years ago" (Hester 1960:66).

The Plains Archaic or Foraging period represents a nomadic, broad-spectrum foraging adaptation to the Plains. These subsistence practices appear to include generalized resource exploitation based on both large and small game hunting and an apparent increase in the reliance on plant resources, with a shift away from specialized big game hunting. Technologically, there appears to be a related shift to more regionally-restricted patterns of tool manufacture. This shift is most apparent in the appearance of many different styles of notched and stemmed projectile points.

While present evidence from the study region is very limited, it does suggest that the emphasis was still on big game hunting.

> Frison states that human adaptations on the Northwestern Plains during the last 4000 years of prehistory were largely dependent on bison (1971:89)....The termination of the Plains Archaic tradition is also variable. It is likely that some human groups using the study area with this adaptation made a transition to a Woodland adaptation as early as 100 B.C. Other groups, like the Algonkian Blackfeet, developed Equestrian Nomadic tradition adaptations from a Plains Archaic base very late in prehistory [Gregg 1983:256-257].

The named Plains Archaic tradition complexes in or close to the study area include the Logan Creek/Mummy Cave and Oxbow complexes (early), the McKean complex (middle), and the Pelican Lake complex (late).

The Logan Creek/Mummy Cave complex is associated with the earliest side-notched points and is considered to be within the temporal range of ca. 5500-3300 B.C. Components near the survey area include a find similar to a Hawken point from site 39ED14, located northeast of Aberdeen (Hannus et. al 1982).

The Oxbow complex is named from a site in Saskatchewan and has been variously dated to span the period 3500-1000 B.C., although few dates are available for Oxbow components in South Dakota.

The McKean complex embraces McKean Lanceolate points, Mallory points, Duncan points, Hanna points, Yonkee points, and associated remains, including several unnamed point varieties.

> The widespread McKean presence on the Northern Plains has been described as 'explosive' (Wormington and Forbis 1965:190) and 'almost dramatic' (Frison 1978:46). This presence correlates with the beginning of the essentially modern Sub-Boreal climatic episode (cool and moist in comparison with the Atlantic). Faunal and floral resource potentials are believed to have been similar to those of the early Historic period [Gregg 1983:270].

The McKean complex has an extensive distribution and a broad time frame, ranging from ca. 3000 B.C. to 510 B.C. It may represent the earliest intensive use of the Little Missouri region (Loendorf et al. 1982:51) and the beginnings of a more intensive exploitation of the present study area. Although there has been little detailed evaluation of McKean complex subsistence strategies/adaptations, what evidence there is suggests a heavy reliance on bison hunting. Syms postulates that McKean groups may have "lived much of the

year in small groups and combined into larger groups during the summer for buffalo hunts" (1969:169).

The Pelican Lake complex components follow those of the McKean complex throughout most of the geographic extent of McKean and the adaptive strategies are similar. Gregg observes: "There is considerable taxonomic confusion with the Pelican Lake point type and varieties. Any corner notched or corner removed point dating ca. 1500 B.C.-A.D. 400 is frequently classified as Pelican Lake" (Gregg 1983:273).

"Most Northern Plains archeologists agree that Pelican Lake developed out of the McKean complex (cf. Joyes 1970:212; Reeves 1970a:167). In the Little Missouri region...'it appears there was a continuous transition, in terms of exploitation of the region,' from McKean to Pelican Lake (Loendorf et al. 1982:52)" (Gregg 1983:273). However, "the question of whether Pelican Lake cultures represent an in situ development from preceding cultures or a cultural intrusion of Woodland influenced populations" (Beckes and Keyser 1983:185) needs further evaluation.

"Reeves places the 'transition from Hanna to Pelican Lake at ca. 1300 B.C. to 750 B.C.' with regional variations (1970b:330). The temporal range suggested for the Pelican Lake complex in the study area is 1500 B.C.-A.D. 250" (Gregg 1983:273).

The few Archaic sites known from the Middle Missouri subarea have been deeply-buried, a condition which may explain the relative scarcity of Archaic sites when compared to later periods, although it is assumed that the population density during later periods was also much larger than during the Archaic. Early Archaic components are represented at Travis 2 and Medicine Crow by transitional lanceolate point varieties (Ahler 1989; Ahler et al. 1977), while later Middle Archaic McKean/Hanna types are found at Walth Bay and Medicine Crow, as well as at the McBride Mounds site (39BF219), located near Ft. Thompson (Ahler et al. 1974; Irving 1958; Neuman 1964).

The Late Plains Archaic evolves on the Northern Plains with manifestations of the Pelican Lake point complex replacing McKean. No well-defined Pelican Lake sites have as yet been dated in South Dakota, although the Pelican Lake Corner-Notched point type is found frequently in surface collections in the Black Hills (Haug 1976) and in outwashed cultural deposits in the White River Badlands (Hannus et al. 1983; Hannus et al. 1984).

Three Archaic sites have been identified in the Indian Creek Recreation Area near Mobridge on the east bank of Lake Oahe (Winham and Lueck 1983). One of these sites, 39WW42, was dated to 3230 ± 120 B.P. and appears to be related to the Pelican Lake point complex.

In addition to the above, a number of unspecified (non-Pelican Lake) Late Plains Archaic points have been recovered in the region. Beckes and Keyser record "a class of generalized, as yet untyped, side and corner-notched points of probable Late Archaic affiliation...on the Grasslands" (1983:193). "This point style diversification may be accounted for by relatively high Late Plains Archaic period human population densities and increased regionalism. Lessened post-Sub-Boreal erosional and depositional landscape modification means increased potential for encountering archeological components from this period" (Gregg 1983:278).

Late Prehistoric/Plains Woodland Period (A.D. 1-900)

Sites assignable to the Plains Woodland period, the third major prehistoric period, are rather common in the Middle Missouri subarea. The Plains Woodland tradition is usually viewed as a time of innovation during which many new technological, economic, and social elements make their appearance, probably diffusing into the subarea from the Eastern Woodlands. Subsistence patterns are similar to those of the preceding Plains Archaic tradition, although a high dependence on bison hunting is now apparent, suggesting the return to a more specialized hunting pattern. Incipient horticulture may also have been a component of Plains Woodland subsistence, although current evidence is inconclusive. Other innovations of importance include ceramics, the first documented use of semipermanent dwellings (see Hoffman 1968), the bow and arrow, and mortuary ceremonialism as

evidenced by elaborate burial mounds. All of these factors suggest a more complex, stable and sedentary lifeway than was present during the preceding periods.

The Woodland period manifestation in the Middle Missouri subarea is primarily represented by what has been classified as Sonota (Neuman 1975), a complex which appears to be a blending of Plains Archaic tradition traits associated with bison hunting specialization, as reflected in the Besant point types, and the diffused characteristics of the Eastern Woodland tradition (Nowak 1981). The Besant point apparently evolves from the earlier Pelican Lake point complex (cf. Kehoe 1974). The Besant point is recognized by the characteristic atlatl dart point configuration, having shallow notches and rounded shoulders; the basic type is known as Besant Side-Notched.

> The Besant complex is the earliest named archeological unit associated with ceramics within the general study region. Often this complex is placed under the label of the Plains Archaic tradition, and there "may or may not be qualitative differences between Woodland and Plains Archaic lifeways in North Dakota" (Gregg 1983:278). Besant is partially contemporary with late Pelican Lake on the northwestern plains, with Laurel to the east and northeast, and with Avonlea. The Hopewellian Interaction Sphere (Caldwell 1964) was ongoing during a portion of the Besant temporal range....Reeves suggests that KRF entered the...H.I.S. through Besant and that Besant interaction indicates qualitative differences in transportation systems, communication systems, and social organization in comparison with traditional Northwestern Plains hunter-gatherer societies (1970a:172-173) [Gregg 1983:280-282].

Reeves suggests a Besant temporal range of A.D. 1 to A.D. 700 or A.D. 800 in the Northern Plains (Reeves 1970b). The Besant complex is one of several complexes within the Plains Woodland tradition and is the one represented within the present project boundaries. Haberman (1979) has reported a small, temporary aceramic occupation site (39ST80) assignable to the Sonota complex which yielded two Besant-like points. The site is situated on the uplands at the edge of the Missouri breaks south of the project area.

With the technological transition from atlatl to arrow between A.D. 420 and A.D. 750, the Samantha Side-Notched, the smaller corresponding arrow point of the Besant technocomplex, replaces the Besant Side-Notched (Reeves 1970b:89, 90).

The Avonlea complex is considered to have developed in place out of Pelican Lake (Reeves 1970a) with a temporal range in the study area of ca. A.D. 450-1000. Avonlea consists of a distinctive projectile point type as well as a number of components (all late) containing ceramics.

"Late Prehistoric Corner/Side-Notched," "Plains/Prairie Side/Corner-Notched" or "Late Prehistoric unnotched" points are also found in the region; specific dating of these specimens is lacking and they may range in date from the Woodland through the subsequent Plains Village periods.

Late Prehistoric/Plains Village Period (A.D. 900-1862)

The Plains Village period, in terms of the number of sites identified, is the most predominant cultural phenomenon in the Middle Missouri subarea. The period encompasses the Late Prehistoric and Early Historic time frames, and is broken down by Lehmer (1971) into a number of taxonomic units. Using Lehmer's system, the Plains Village period includes the prehistoric Middle Missouri tradition and the prehistoric and historic Coalescent tradition, which are comprised of seven variants: 1) Initial Middle Missouri (A.D. 900-1400); 2) Extended Middle Missouri (A.D. 1100-1550); 3) Terminal Middle Missouri (A.D. 1550-1675); 4) Initial Coalescent (A.D. 1400-1550); 5) Extended Coalescent (A.D. 1550-1675); 6) Post-Contact Coalescent (A.D. 1675-1780); and 7) Disorganized Coalescent (A.D. 1780-1862) (see also Caldwell 1966b; Wood 1965). While the major framework of Lehmer's taxonomic scheme for the Plains Village period is still usable,

continuing research in the subarea makes it clear that revisions are needed, particularly in unit definition and chronology.

Plains Village tradition sites are best known as both fortified and unfortified extensive earthlodge villages. Other, less well-known, site types include isolated earthlodges, campsites, burial grounds, and activity areas. Such sites were once common along both sides of the Missouri River throughout most of the subarea, particularly on level terraces and bottomlands. Prominent features of the tradition include semisedentary settlement and subsistence based on horticulture, hunting - particularly of bison, and gathering of wild plants. The innovations noted for the preceding Plains Woodland period (i.e., increased sedentism, horticulture, ceramic manufacture, the bow and arrow, and substantial dwellings) all manifest themselves in more fully-developed and complex forms during this period. It is evident that the overall social complexity in Native American lifeways reached its height in the subarea during the Plains Village period.

Fully-developed village culture is first seen in the subarea with the emergence of the Initial Middle Missouri variant. Groups of this variant are thought to have entered the subarea from the east, ostensibly under the distant influences of Mississippian culture (Lehmer 1971; Wedel 1961). Three sites from the subsequent Extended Middle Missouri variant are inundated near the project area--39AR8, 39AR201 and 39AR210 (see Caldwell 1966a:4-38). The Initial Coalescent variant arises from the next major population movement into the subarea. This migration of peoples from the Central Plains is interpreted as the result of environmental stress, principally drought. In Lehmer's (1971) view, the product of these movements of village peoples was a "coalescence" of village lifeways into later Coalescent variant groups, resulting from culture contacts, conflicts, and exchange of ideas. This process ultimately led to the development of the historically known Arikara, Mandan, and Hidatsa village tribes. Five sites from the Extended Coalescent variant are inundated near the project area--39AR2/39DW24, 39AR4, 39AR5, 39AR7 and 39AR203 (see Johnston and Hoffman 1966, among others).

During the Protohistoric and Early Historic time frames (ca. A.D. 1675-1800), the development of the Euro-American/Native American fur trade system caused fundamental changes in Plains Village lifeways, as well as the lifeways of all other Northern Plains groups. The acquisition and trade of European manufactured goods became a major aspect of village economies, eventually leading to drastic alterations throughout the entire village social structure (Deetz 1965; Ewers 1954; Wood 1972, 1974). Epidemic diseases introduced into the subarea at this time also had a disastrous effect on traditional village culture, resulting in severe population reduction and extreme cultural disruption. As a result of these historical processes of change, the Plains Village period came to an end in A.D. 1862 with the amalgamation of the surviving Arikara, Mandan and Hidatsa into a single village at Like-a-Fishhook, their last traditional earthlodge settlement (Smith 1972). Two sites inundated near the project area, the Rosa site (39P03) and the Four Bear site (39DW2), are considered ancestral to the Arikara [Post-Contact Coalescent archeologically] (Hurt 1959; Hurt et al. 1962). Several other 'late' sites inundated near the project area are 39AR207 (see Johnston 1966:176-185), 39AR209 and 39DW10.

Stone circle sites or tipi ring sites are most often associated with the Late Prehistoric period, but several have been shown to date to the Middle/Late Archaic periods and some are possibly earlier (Winham 1982:23.2). Another site type associated with the Plains Village period in the study area is the eagle trapping pit. Few examples of these two site types were located during this survey or by the previous USACE surveys in Dewey, Stanley, Potter and Sully counties.

The Central Plains tradition is not directly represented by any sites in the Middle Missouri area, but its influences are apparent.

> It is generally understood that the prehistoric village cultures eventually developed into the Mandan, Hidatsa, and Arikara tribes who inhabited the Middle Missouri subarea in historic times. The Arikara have oral traditions of having moved into the Missouri valley from areas to the south, in

particular from the Central Plains, and the archeological record supports these traditions to a great degree (Deetz 1965:5-7). Likewise, the Mandan have oral traditions in which various parts of the tribe moved to their eventual homeland in South Dakota and particularly North Dakota from somewhere to the east and southeast (Bowers 1948:19-24; 1950:15-18), and to some extent the archeological record also supports these traditions. The Hidatsa have distinct traditions for three different subparts of the tribe, with the Hidatsa Proper and the Awaxawi claiming to have arrived on the Missouri River from the east, and with the third subtribe of the Hidatsa, the Awatixa, claiming to have always lived on the Missouri River in the Knife-Heart region (Wood 1980; Bowers 1948:17-19) [Lovick and Ahler 1982:56].

Lovick and Ahler's recent reassessment of the Plains Village period in the Knife-Heart region (1982:54-84) shows a much more complex set of interactions and processes of coalescence that can be incorporated into either Lehmer's (1971) or Bowers's (1948) classificatory schemes.

Euro-American Period-Early Historic Period (A.D. 1700-1860)

With the advent of the fur trade and the introduction of European manufactured goods and the horse, a new Native American force arose on the Northern Plains - nomadic Equestrians. These relative newcomers began to rapidly replace Plains Villagers as the dominant cultural entity in the subarea. During the early 1700s nomadic tribes began moving onto the Northern Plains from the east under the pressures of the expanding Euro-American frontier and intertribal warfare. These Plains Equestrians became historically known groups such as the Sioux, Cheyenne, Crow and Assiniboine. After 1780, as smallpox decimated the village tribes, the mounted nomads (especially the Sioux), who were less devastated by the epidemic, were able to dominate the Middle Missouri area well into the Historic period. However, sites relating to these groups are rarely identified and little archeology is directly attributable to them.

Occurring along with the rise of the Plains Equestrian groups, was the development of the Euro-American/Native American fur trade, which actively operated in the Middle Missouri during most of the nineteenth century. Euro-American fur trading posts, at one time, were a common type of archeological site in the region. However, these sites, like all other site types, have suffered from dam and reservoir construction, and few intact examples exist today.

Individuals who may have been closely associated with the fur trade in and near the current project area include licensed traders located near the mouth of the Little Cheyenne River in 1830 (The Wi-Iyohi 1954 7(11):8), from 1836 to 1839, and in 1843 (The Wi-Iyohi 1967 21(2)). The American Fur Company maintained a satellite to Fort Tecumseh at the Little Cheyenne River, "...probably at the timber at its mouth...(with)...J. Holiday...the trader there in 1830..." (The Wi-Iyohi 1954 7(11):8). Other licensees who traded on the Little Cheyenne River and may have used a post there are Pratte, Choteau & Company in 1836; William Sublette in 1843; LeClerc & Garvin in 1837; and Berain & Provanche in 1838 (The Wi-Iyohi 1967). An unidentified individual has unofficially penciled in the location for a Trading Post 1832 at the same location on the 1904 Historical Atlas of South Dakota (by E. Frank Peterson) filed at the South Dakota State Historical Society. It should be noted that the 1967 article of The Wi-Iyohi cited above does not positively identify a post as having been at the mouth of the Little Cheyenne River. Mattison (1954) also does not mention such a post. Valles Trading Post (422.5--No. 86) is thought to be inundated near the project area.

Euro-American Period-Late Historic Period (A.D. 1860-Present)

Toward the end of the fur trade era, U.S. military occupation of the Middle Missouri began. A number of Indian agency posts and forts were established along the Missouri (Athearn 1967). The purpose of the military presence was to subjugate and pacify the native population in order to secure the region for permanent Euro-American settlement. While not as numerous as the fur posts, U.S. military establishments were once rather common in the region.

Military expeditions associated with the general region reflect a presence designed to first subdue or control the activities of Indian groups to promote the fur trade, then to protect miners headed for the gold rush in Montana and Idaho in the late nineteenth century, and, finally, to protect frontier settlements (Athearn 1967:214-215, 268, 276). The military presence also included a chain of forts along the Missouri River and across Dakota Territory. The army posts closest to the current project lands were located just upriver and downriver from the project boundaries. The Grand River Agency (1870 to 1875) was located near the mouth of the Grand River; the Cheyenne River Agency Post II and Fort Bennett I and II (active 1870 to 1891) were all located about 5 miles below the mouth of the Cheyenne River; and Fort Sully No. 2 or New Fort Sully (1866 to 1894) was located about 13 miles below the Little Bend Recreation Area (Mattison 1954).

Fort Sully was named after General Alfred H. Sully. Sully led a military expedition in 1863 and again in 1864 along the east side of the Missouri River. The 1863 expedition was in pursuit of Santee Sioux who had fled from Minnesota in the Indian uprising which began in 1862; the 1864 expedition was an attempt to engage and defeat not only the Santee, but also the many Teton Sioux, Yanktonais, and Cheyennes involved in the uprising by that time (Robinson 1973).

Both of Sully's expeditions traveled across from the project area at the Whitlocks Bay Recreation Area. In 1863, Sully's expedition arrived at the mouth of the Little Cheyenne River near Forest City, which is inundated about a mile east of the project area. The expedition subsequently proceeded up the Little Cheyenne River to Bismarck (Robinson 1973:301). In 1864, Sully's expedition was again in the vicinity of the mouth of the Little Cheyenne River. Captain John Fielner, a topographical engineer, was shot and killed by three Indians as he drank from the creek at the crossing of the Little Cheyenne River. Though warned not to leave the column, Fielner and two other soldiers had gone to look at the Medicine Rock in the SE1/4 of Section 16, T118N, R78W. Fielner's death was the first to occur in the 1864 campaign (Robinson 1973:310). When General Sully learned of this attack he sent Captain Miner and Co. A Dakota Cavalry after the Indians. The cavalry overtook the Indians after pursuing them for about 15 miles. Sully had the Indians decapitated and left their heads on poles on the hills nearby where they had been dispatched (Robinson 1973:310).

A number of reservations were formed to hold subjugated Indian groups (the Cheyenne River Indian Reservation is adjacent to the current study area). Reservation archeological sites consist of the remains of Indian agencies (site 455.7--No. 99), including structures left from military, missionary (sites No. 59 and 455.6--No. 98), and Bureau of Indian Affairs occupation. Structural remains such as "dugouts" and cabins once occupied by the Native American population are also present. Several 'sites' from this period inundated near the project area are 39AR202, Nos. 21-36, 38-39, 41-42, 44-51, 53-55, 57-76 and 79-81. Native American burials from the Reservation period may also be encountered, commonly occurring as multiple grave depressions. 'Sites' of this type inundated near the project are Nos. 37, 40, 60 and 77.

Once the subarea had been secured by the military, Euro-American settlers began occupying the region. Early Euro-American settlement sites consist of the remains of small communities (see sites 429--No. 89 and 456--No. 100), post offices, homesteads, and farm/ranch yards. Cemeteries of this period are also present, usually as small community or family plots (such as 'site' 455.7--No. 99, and No. 110?).

Euro-American settlement of the area began largely after the Civil War in 1868, when military posts providing protection from the Indians were reestablished (Chittick 1973:91). The areas were surveyed by the General Land Office in 1882 and 1884, for the most part. Euro-American settlement of the region was complete by the early 1900s, and land use and settlement patterns had become more or less fixed, continuing until the present day. However, abandonment has occurred in the region for several reasons. Many towns which were created along the Missouri River when it was the major route of transportation were abandoned when competitive transportation became available. Railroads were the first major competitors; these were primarily built in the period from 1878 to 1885. Extensive hard-surface highway systems have had a depressing effect on the railroads similar to the effect of the railway system on river transportation (Alley 1979).

Periodic droughts in the area, particularly the drought of the 1930s, have contributed to a cumulative form of abandonment represented by increases in the average farm size, reversal of a trend towards urbanization, and a major reversal in a trend of increasing population since the 1930s (Chittick 1973); increased mechanization, employment opportunities elsewhere and the consolidation of small non-economic farms have also contributed to this result. The drought of the 1930s and the Great Depression were major factors behind the creation of the flood control and irrigation systems of which the large reservoirs such as Oahe are a part.

Construction of the Oahe Dam began in 1948 and it was closed in 1958. The inundation of the Missouri Valley, following closure of the Oahe Dam in the early 1950s, forced the relocation of a number of small towns (including the Cheyenne River Indian Agency) as well as most of the Indian population, resulting in a social dislocation which requires continuing adjustments (for another example see Bureau of Indian Affairs 1971:2).

6. RESEARCH ORIENTATION

The primary purpose of this project was to locate and evaluate cultural resource sites and to predict the potential for sites (buried) within the approximately 15,740 acre (24.6 sq. miles) survey area. While this survey first and foremost is a basic inventory, it also has the potential to address research questions/temporal periods discussed in the South Dakota State Plan for Archeological Resources and to expand applicable research questions.

The research design follows directions suggested in the State Plan. The project area is within the Grand-Moreau and Bad-Cheyenne archeological regions. For these regions the State Plan emphasizes a focus on Plains Village occupation and Historic period research, while stressing the need for basic inventory, particularly off the Missouri Trench, and investigations into pre-Plains Village occupation. The results of this survey will be compared with those from previous surveys in the immediate project area (Lueck, Lippincott and Winham 1989; Winham and Lueck 1983, 1987; Winham et al. 1988) with regard to site locational characteristics, site density, and settlement history. Information derived from other surveys alongside Lake Oahe in North and South Dakota will also be reviewed (Falk et al. 1986; Larson et al. 1983, 1986; Sanders et al. 1987, 1988; Toom and Artz 1985).

To accomplish the tasks discussed above, two primary goals were proposed based on recent work performed by AL in the Missouri River region of both North and South Dakota.

Goal 1 sought to fully evaluate and utilize existing archival data and reports prior to the initiation of the field survey. This maximized the information to be gained from the survey by allowing the investigators to field check all previously reported sites.

Goal 2 sought to record information on the sites located in the field with regard to several specific research orientations that have been and/or are currently being studied in this area: a) utilization of Knife River Flint; b) site location characteristics, e.g., Leaf's hunting camp location hypothesis (Leaf 1976:61) and the apparent butte top locations of Woodland period sites; c) approaches to studies of specific site types - stone circles/rock cairns (see Davis 1983), lithic/occupation scatters, and historic sites; and d) development of cultural chronology - utilizing projectile point/ceramic analyses and radiocarbon dating.

Research Design

The baseline requirements guiding data retrieval for this project are the management needs of the USACE which include an identification of the cultural materials/features and their context, plus an evaluation of present or predicted adverse effects to the cultural resources.

General data recovery, therefore, focused on:

1) site content - documenting all visible aspects of the site to define site typology/function based on the presence/absence of features, artifact types/concentrations, artifact density and site size;
2) site location - compiling standardized locational data for locational analyses/ comparisons with previous work (outlined above); and
3) site research potential - addressing National Register eligibility potential and site management priorities with regard to USACE research directives (outlined above).

The research design specified that data collected/generated may include:

1) diagnostic items/charcoal samples in exposed features in order to address questions of site components and temporal period;
2) a record of the percentage occurrence of lithic raw material types at each site in order to provide comparative data for studies of lithic utilization in the region; and
3) scale plan maps - to provide a map accurately documenting the location of features, collected items and site boundaries which can be used as the basis for determining future work at the site, if necessary.

The majority of the sites in the project area were expected to be analogous to types previously recorded in this general area by the Archeology Laboratory, Augustana College in adjoining Dewey and Stanley counties (Lueck et al. 1989; Winham and Lueck 1987). These types include prehistoric artifact scatters and various historic sites, including stone cairns and pits. Most previous archeological work in and near the proposed project area has focused heavily on the Missouri River, with specific attention directed to the more prominent Plains Village sites.

The majority of the sites actually encountered were cultural material (artifact) scatters of unknown cultural/temporal affiliation and historic sites. Few Paleoindian, Archaic and Plains Woodland sites have been previously recorded in the region, and only a limited number of Late Prehistoric sites are known.

The initial emphasis of data collection and study, therefore, focused on lithic analyses and site assemblage/feature comparisons. Data on lithic raw materials, artifact types and utilization (specific tool types - i.e., projectile points, bifaces, choppers) and additional site feature types were collected in a standardized manner.

Much basic data are still needed to allow adequate evaluation of the region's significance to human groups, i.e., degree of human utilization of the region through time, the origins and developments of the Archaic and Woodland groups, the types of settlement and subsistence models applicable to the area through time, and the extent of trade and external influences on the region through time. Retrieval of primary data ranked as an important principal focus of the current field methodology.

Historical Archeology

A variety of historic site types have been previously recorded in the project vicinity, including townsites, schools, post offices, Indian agencies, forts, foundations, and depressions associated with homesteads and ranches. In addition, pits and rock cairns have been reported in the Historic period.

All historic remains identified in the current project area were recent and insignificant. Materials for these sites, including plans, photographs and notes, were assessed by the project's field director and principal investigators. Following that assessment, none of these sites (including one group of stones) was determined to require further evaluation.

Data Analyses - Research and Management Goals

1. The recorded manifestations of the site in the field were evaluated with the following aims:
   a) Determine the potential boundaries of the site;
   b) Determine potential activity areas such as artifact concentrations and features;
   c) Evaluate the site's research potential based on the number of components, its potential for buried cultural material, the presence of diagnostics and charcoal samples (whether from fire hearths or heat-altered lithic material), the integrity of the site, and the specific research questions that could be addressed at the site;
   d) Assess National Register of Historic Places eligibility;
   e) Evaluate the effect which adverse impacts have had/may have on the site; and
   f) Assess site significance, if possible, with reference to recent surveys in the Lake Oahe region (AL in 1985-1986; UNL in 1978) and the surveys done for the Northern Border Pipeline project (Hannus et al. 1982; Root and Gregg 1983).

2. An analysis of site structure, function and variability was completed.

The majority of the site-specific data collected in the field as well as that generated by the specific analytical work, were input into a computer for basic data manipulation and summary using Apple/Mackintosh software. Because of the nature of the project (surface survey) and limited collection policy, the majority of the data manipulations are simple tables and graphs.

7. FIELD METHODOLOGY

Field Survey Methods, Organization and Schedule

The field examination procedures described below were employed.

1. The investigation was primarily a pedestrian survey, i.e., the project area and cutbanks were examined on foot. No areas were inaccessible from land.

2. During the pedestrian survey all project areas were intensively examined by transect walking where possible, with the maximum transect interval being 30 m. The exceptions occurred in areas of extremely steep and/or dissected topography when the survey was limited to accessible areas with site potential.

The survey area was partitioned into 'blocks' in relation to the topography based on natural features/barriers, such as steep-sided drainages. The ground crew walked transects sometimes at right angles to the shoreline and at other times parallel to the shore. They also checked accessible cutbank/shoreline areas. In areas where the terrain prohibited either of the above survey methods, at the discretion of the field archeologist, other survey procedures were employed. The main purpose of this approach was to avoid unnecessary delays to the survey resulting from crossing over difficult terrain (such as drainages) more than was absolutely required. The crew worked out of motels in Gettysburg, South Dakota.

As noted above, much of the records search was conducted in 1991. The on-the-ground survey, additional records searches and informant interviews were conducted in 1992.

3. Shovel tests were employed when there was little or no ground surface visibility and a high probability for a site existed. A shovel test was excavated or a cutbank profile studied at each site unless there was no doubt that the site was completely outwashed and located on redeposited beach deposits. All tests were backfilled immediately. No sites were discovered during the shovel testing.

4. Once a site was located, the following information was obtained.
   a) The size and boundaries of the site were established, if possible, within the project area.
   b) The site components and complexity were established, if possible, through mapping of features, lithic and ceramic concentrations and other materials. Each final site map (planview, profiles, artifact concentrations, etc.) was ground-truthed, drawn to scale, and submitted as a formal, technical, drafted detail map on mylar/PMT originals in India ink, or drafted on the computer.
   c) When possible, flake counts were undertaken to determine both density and variation of lithics and other material types across the site.
   d) Only artifacts necessary to determine the cultural component or components at a site or those that may be used in interpretive displays were collected, such as diagnostic tools, rimsherds, and trade goods.
   e) Stratigraphic sequences visible in cutbanks were recorded and photographed.
   f) Threats to sites from erosion or other factors were evaluated. No damage to apparently significant cultural resources or human remains was observed, and it was not necessary to notify the Contracting Officer.
   g) The sites were located on the maps and photographs provided.
   h) Site area maps were produced using a Brunton or Army Surplus compass and metric tape. Formal civil engineering procedures for scale mapping, including establishment of datum point locations using metal rods (8-10 in. long spikes), were employed.

i) Black-and-white photographs and color slides of each site were taken to illustrate location and any specific features of the site.
j) No historic sites were located, thereby eliminating the need for an evaluation by a historical archeologist/architectural historian.

Field Survey Conditions

The 1992 field survey season was characterized by a typical variety of early spring weather patterns ranging from sunshine to rain and severe storms. On the whole, survey conditions were fair to good, but lake wind advisories were common.

Visibility and access conditions were generally good for this project. The level of Lake Oahe was relatively low, allowing access to all shoreline areas and "islands." Crew size varied in response to the needs of the survey. Tribal lands adjoin nearly all of the project area, and permission to cross tribal lands had been acquired prior to the field survey. When leasees were met, or it appeared necessary to cross private lands to reach the USACE lands, verbal permission from leasees was acquired. Generally, a three-person crew (in a single vehicle) surveyed the larger land blocks, while smaller islands/areas were surveyed by a one- or two-person crew. The three-person crew occasionally split into two crews, a two-person crew and a one-person crew, the latter surveying out and back, while the former crew surveyed in the direction of the one-man crew. When this procedure was employed, two-way radios were used to keep constant contact between field personnel.

Data Recording Procedures and Definitions

A standardized method was used to record field data. Site data collection consisted essentially of completion of the South Dakota State Site Form(s) supplemented by specific field data designed to address the research orientations described above (e.g., for lithic raw material types and stone cairn sites). A more exacting focus for data collection for each site was established following the initial evaluation of previous work in the region.

The categories of data collected in the field included: legal location; location on aerial photos and boating and recreation maps; access to site; site owner; type of resource/ component; site description; site size; features present; scale plan map; terrain; slope; soil; vegetation; nearest water; site condition/impacts; National Register evaluation; research potentials; assemblage description; and subsurface evaluation (based on exposures, shovel testing/profiles, and topography).

8. SITE INVENTORY

Sites Identified During the Literature Search but Not Relocated

No sites were previously recorded as existing within the survey area. Further research indicated that two sites (39AR3 and a possible historical structure shown on the GLO map--No. 34, Table 3) had some minimal potential to be located in the project area. However, site 39AR3 appears to have been located elsewhere, while No. 34 appears to be an inkspot accidentally placed on the map. No additional work is recommended for these localities.

Summary and Evaluation of Cultural Resources

The survey recorded six prehistoric sites, 19 isolated finds (eight prehistoric, one historic or prehistoric and 10 historic), four recent historic localities and three paleontological localities (Figure 9). The prehistoric sites recorded consist of two artifact scatters, two stone circle sites and two stone cairns. The prehistoric sites and recent historic localities are summarized below, and the isolated finds and paleontological finds are summarized later (Table 6).

Summary of Survey Results

Detailed individual site descriptions are provided below, following the site type summaries. Further information is found in the site forms in Appendix C.

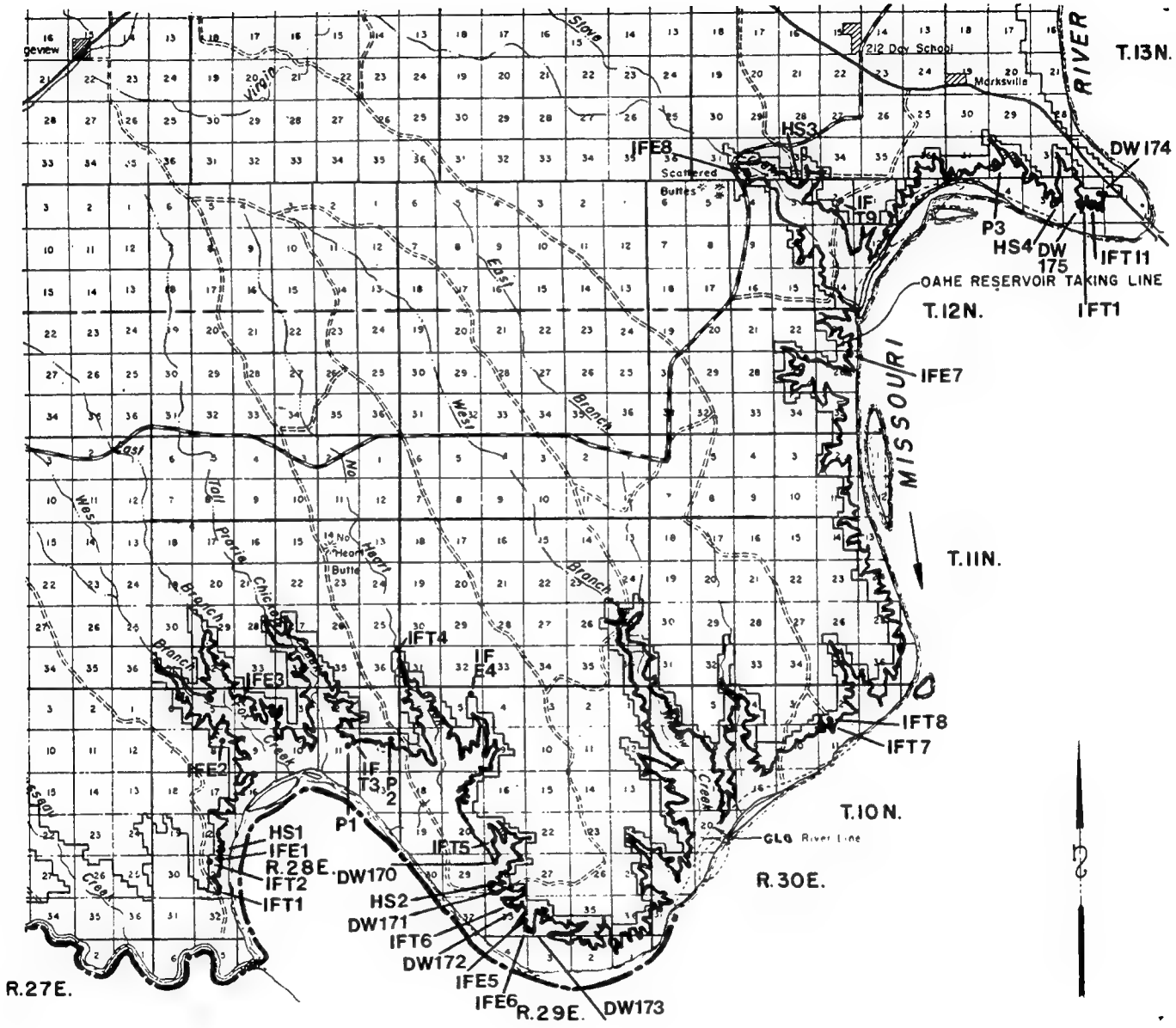


Figure 9. Map showing the overall distribution of prehistoric sites, isolated finds, recent historic localities, and paleontological localities within the Dewey County survey area (adapted from Cheyenne River Indian Reservation, South Dakota BIA 1963).

Management Considerations - All Site Types With Artifacts

The interpretation of surficially-exposed materials is complicated by various cultural and non-cultural transformations imposed on the target (original) population of artifacts, and by the methods of exposure of buried material (e.g., agriculture, rodent burrows, differential erosion). In assessing the significance of cultural material scatters it is assumed that the more complex a site is, the greater permanence and/or importance it probably possessed. Complexity can be measured in terms of the number and types of formed tools at a site, presumed to illustrate different activities; the stages of tool making represented; the variety of lithic raw materials utilized; the range of associated non-lithic materials; the presence of hearths or indications of the use of fire; and size and material density at the site. In addition, the presence of other features associated with the artifact scatter increases the significance/research potential of the site. Sites at which buried cultural material has been documented, as well as those where there is such a potential, have added significance. In many cases, however, only a program of testing can ultimately determine the subsurface integrity of a site.

Using the above criteria to provide a format comparable with previous surveys (Winham et al. 1987a, 1987b), management categories are defined for the prehistoric sites and isolated finds, as follows:

(1) *Good Research Potential*

Sites over 3000 m^2, with three or more raw material types present and which have the potential for buried deposits: None.

Sites over 3000 m^2, with two raw material types present and which have the potential for buried deposits: None.

Sites over 3000 m^2, with one raw material type present and which have the potential for buried deposits: None.

Sites less than 3000 m^2, with two or more raw material types present and which have the potential for buried deposits: None.

(2) *Fair Research Potential*

Sites less than 3000 m^2, with one raw material type present and which have the potential for buried deposits: 39DW172, 39DW173 and 39DW175.

(3) *Little Or No Research Potential*

Sites considered to be surficial with little or no potential for buried deposits (other than features cut into the subsoil): 39DW170, 39DW171, 39DW174 and IFT4.

(4) *Sites and Isolated Finds Totally Outwashed or Deflated*: IFE5, IFE8, IFT2, IFT3, IFT5, IFT9, IFT10 and IFT11.

Artifact Scatters (No Features)

Two cultural material (artifact) scatters, sites 39DW174 and 39DW175, were recorded during the survey. Both of these sites contained chipped stone material. Locally-occurring cherts dominate the lithic raw material inventory at both sites. Table 5 summarizes the lithic raw materials associated with the prehistoric sites and isolated finds.

Table 5. Lithic Raw Materials Associated With the Dewey County Artifact Scatter Sites and Isolated Finds.

Site Number	BS	TRS (R)	TRS (G)	PW	CL	TC	RGC/ RBC/ RC	GC	WC	BC	BHQ	QZT	QZ	GR
39DW174	4	4	31	2	5	1	3	3	3	2	3	1	1	7
39DW175					1									
IFE5													1	
IFE8					1									
IFT2														1
IFT3														1
IFT5														1
IFT9														1
IFT10					1									
IFT11			1											
Totals	**4**	**4**	**32**	**2**	**8**	**1**	**3**	**3**	**3**	**2**	**3**	**1**	**2**	**11**

Note: 3-4+ problematical shale items from site 39DW175 are not included.

KEY: BS-Basalt
TRS (R)-Tongue River Silica - Red
TRS (G)-Tongue River Silica - Gray
PW-Petrified Wood
CL-Chalcedony
TC-Tan Chert
RGC/RBC/RC-Reddish-Gray Chert/Reddish-Brown Chert/Red Chert
GC-Gray Chert
WC-White Chert
BC-Brown Chert
BHQ-Bijou Hills Quartzite
QZT-Quartzite
QZ-Quartz
GR-Granite

Cairns

Two stone cairns, 39DW171 and 39DW173, were recorded during the survey. None of the cairns recorded during this survey are associated with stone circles, an association documented on other surveys (e.g., in Dewey and Stanley counties, South Dakota; see Lueck et al. 1989; Winham and Lueck 1987).

Rock cairns are one of the most common and visible archeological features on the Northern Plains although their functions are little investigated and poorly understood. Good and Schreiner (1981:185-188) provide the following discussion (abridged below) of this site type:

> Most rock cairns found in alignment are interpreted as representing animal drive lines or trail markers. Gilmore (1924) was informed by members of the Arikara Tribe in North Dakota that during the "old days" Assiniboine participants in communal bison hunts would align themselves along a route as indicated by a series of rock piles. The participants along the line(s) (there were often two, parallel lines) would, in essence, act as a

human barricade, funneling the movement of the driven herd over a steep embankment or into a geographically confined or prepared impoundment area. Loendorf (1971) has recorded and investigated a number of such drive lines and associated bison kill sites in the Big Horn Canyon area of Montana.

In areas of rock terrain, larger stones would often be removed from proposed or established trails in order to avoid breakage of travois poles. When placed in piles, these rocks may have served the double function of marking the trail route. This practice is well-documented by the tradition of the Crow (Bradley 1961). These piles were often placed atop prominent geographic features to serve as landmarks in unfamiliar surroundings. Loendorf (1971) supplies a description and ample documentation of one such trail (Bad Pass Trail, 24CB853) through the Big Horn and Pryor mountains of Wyoming and Montana, and to the mouth of the Big Horn Canyon in the latter state.

George Will (1924) was informed that rock piles were constructed near the sites of old Mandan and Hidatsa villages "in memory of their ancestors who formerly lived there." The Blackfeet are also said to have erected cairns to mark the sites of memorable events (Kehoe 1954). The same tribe is also reported to have marked the finish line of a horse race with "two piles of rocks three feet high, erected some 60 feet apart" (Ewers 1955).

In 1833, Maximillian described large stones near Fort Union on which bison skulls had been placed. He was informed that the Assiniboine deposited the skulls there to attract other bison (Thwaites 1906).

Bowers (1950) was informed that when a Mandan died away from his or her village, the body was wrapped in robes and may, among other methods, have been placed in a shallow grave covered with stones. It is more generally agreed, however, that "Indians usually secreted their dead rather than advertise their presence with a rock monument" (Malouf 1962).

Upon reviewing reports which dealt in part with rock cairns, Adams (1978) has concluded that some may have functioned as food caches or "rock storage piles" for use during winter when snow covered the ground....

One of the most professionally accepted and most thoroughly documented theories dealing with rock cairns is that some rock cairns served as offering piles left by Indians "to ensure good fortune in their enterprise" (Bradley 1961; Malouf 1962; Nelson 1941). It is believed that some Indians not only placed additional rocks on the pile, but left trinkets as offerings to the spirits (Malouf 1962).

Rock cairns may denote areas of specialized activities such as tool manufacturing or areas where adults gathered to relate legends, tell stories, or instruct their young. In these instances, the cairn would function as a seating platform. The author has been involved in excavation of rock cairns which yielded considerably more lithic debris than was retrieved from excavation of nearby tipi rings, which would appear to provide evidence for this theory [Good and Schreiner 1981:185-188].

Management Considerations - Cairns

The research potential of rock cairns appears to be relatively limited, unless they are associated with larger sites. Without excavation it is not generally possible to predict whether there will be associated cultural material or whether other features or indications of use/function will be found. Nevertheless, none of the sites discussed here should be impacted without further study.

The two stone cairn sites appear to be isolated, single cairns. Since a variety of functions could be represented at these sites, a sample evaluation is recommended.

Stone Circles

Two sites recorded during the survey, 39DW170 and 39DW172, contained stone circles. Neither of the stone circle sites are associated with stone cairns, an association documented by other surveys (e.g., in Dewey and Stanley counties, South Dakota; see Lueck et al. 1989; Winham and Lueck 1987).

Stone circles are a common and visible archeological feature on the Northern Plains although their functions are little investigated and poorly understood. Much information has been written and discussed concerning stone circle sites (e.g., Davis 1983; Good et al. 1981; Kehoe 1960; Quigg and Brumley 1982; Winham 1982).

Management Considerations - Stone Circles

The survival of the stone circle features indicates that these sites maintain a certain integrity; however, excavation alone can reveal the full nature of the research potential retained. Factors that may have impinged on a site's overall integrity include stone removal and deliberate destruction. Although the stones in site 39DW170 appear to be undisturbed, the deposits are thought to be too shallow to preserve significant information that would warrant nomination to the NRHP. On the other hand, the loess deposits at site 39DW172 may preserve more significant information. Management recommendations for the latter site call for further evaluation if the site is to be impacted.

Factors considered when evaluating the importance of these sites include a consideration of the types of sites represented in the project area. Stone circle sites are not well represented along this stretch of the Missouri River.

Prehistoric Isolated Finds

This survey recorded nine prehistoric isolated finds, one of which (IFT9) was reported by a landowner and another which (IFT4) could be either prehistoric or historic. A description of the finds, the number of items noted, and the raw material present at each location are summarized in Table 6.

Management Considerations - Prehistoric Isolated Finds

Isolated finds are not considered significant. However, the overall information provided by these occurrences does contribute to the interpretation of regional culture history and past landscape utilization. None of the prehistoric isolated finds listed above are associated with other prehistoric features for which management considerations have been discussed. Isolated Find No. IFT4, a buried bone fragment, could be historic or prehistoric in age. The other ten isolated finds are historic components.

Site Descriptions (Figures 10-16; Plates 5-10)

Site 39DW170 - Pearman Overlook (Figure 10; Plate 5)

This site consists of two stone circles situated on a high knoll overlooking the Missouri River valley to the east, southeast, south, southwest and west. The site is located on an old Missouri River terrace (T3?), 120-160 feet above the pre-dam Missouri River level and covers 135 square meters. Elevation of the site is 1632 ft. above mean sea level (amsl). The two circles are quite different. Feature 1 is 5.94 m N-S by 6.9 m E-W, with 39 stones. Feature 2 is 3.7 m N-S by 3.6 m E-W and contains 11 stones. The west edge of Feature 2 adjoins the steep cutbank. The stones are largely buried, indicating that the site is extant and largely undisturbed. However, many Pierre Shale concretion fragments and gravels are present on the surface and more are exposed in the adjacent cutbank, suggesting deposits no deeper than the stones, or about 20-25 cm below surface. The type of soil mapped for the area is Sansarc-Shale Land Complex (ScF). The management status (eligibility for nomination to the National Register of Historic Places) is not currently known and further evaluation is recommended.

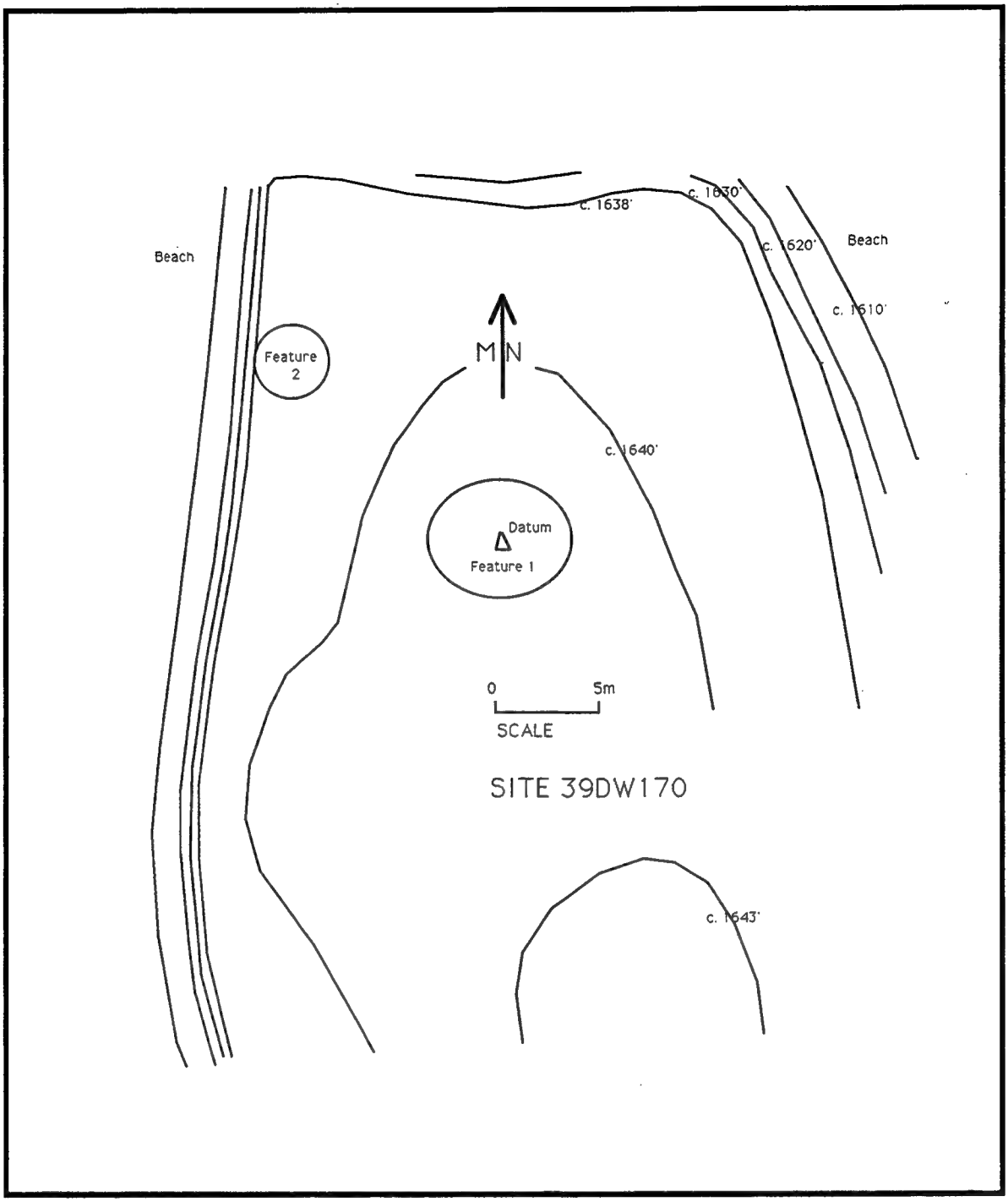


Figure 10. Sketch map of site 39DW170.

Plate 5. Overview of site 39DW170, facing SSE.

Plate 6. Overview of site 39DW171, facing W.

Site 39DW171 - Splits Creek 1 (Figure 11; Plate 6)

Site 39DW171 is a stone cairn situated on the peak of a long, narrow ridge which overlooks the Missouri River valley to the southwest and west. The area is deflated and the stones are only slightly buried. The cairn consists of five stones scattered over an area approximately one meter in diameter. The site is located on an old Missouri River (cut) terrace which is 120-160 feet above the pre-dam Missouri River level. Elevation of the site is 1665 ft. amsl. The soil mapped for the area is Sansarc-Opal Clays (SbE). The management status (eligibility for nomination to the National Register of Historic Places) is not currently known and further evaluation is recommended.

Site 39DW172 - Splits Creek 2 (Figures 12 and 13; Plate 7)

This site comprises a single, irregular stone circle, perhaps double-coursed in some manner, covering 14.21 square meters. The site is located on the edge of an old Missouri River terrace which is 120-160 feet above the pre-dam Missouri River level. The site overlooks the Missouri River valley to the south, southwest, west and northwest. The stone circle is oblong, 4.9 m N-S by 2.9 m E-W, and has 35 stones. The stones are largely buried. Elevation of the site is 1630 ft. amsl. The soils mapped for the area are Sansarc-Opal Clays (SbE) and possibly Agar Silt Loam (AgB).

This site was revisited with the project geomorphologist on May 27, 1992. A 3-inch diameter bucket auger test was placed about two meters north of the center of the feature. The test revealed medium brown silt (loess) to ca. 50 cm below surface (bs); medium/light brown silt from 50-ca. 80 cm bs; and hard, clayey silt from ca. 80-100+ cm. This site is extant and largely undisturbed and is potentially eligible for nomination to the National Register of Historic Places. Additional evaluation of the information content of this site is recommended.

Site 39DW173 - Devil's Island Overlook (Figure 14; Plate 8)

Site 39DW173 consists of a single stone cairn or pavement covering 6.55 square meters. It lies within several meters of the edge of an old Missouri River terrace which is 120-160 feet above the pre-dam Missouri River level. The site overlooks the Missouri River valley to the southeast, south, southwest and west. The cairn/pavement is 2.8 m N-S by 2.34 m E-W, and has 31 stones. Most of the stones are largely buried; two stones have been dislodged, apparently by vehicular traffic. Elevation of the site is 1625 ft. amsl. The soil types mapped for the area are Sansarc-Opal Clays (SbE) and possibly Agar Silt Loam (AgB). Sufficient soil is visible in the cutbank to account for the extent to which the stones are buried, but gravel beds begin at about 30 cm bs.

This site was visited by the geomorphologist on May 27, 1992. It is extant and largely undisturbed. The management status (eligibility for nomination to the National Register of Historic Places) is not currently known. Additional evaluation of the information content of this site is recommended.

Site 39DW174 - Bare Necklace (Figure 15; Plate 9)

This medium (ca. 1 item per square meter) to sparse (less than 1 item per square meter) scatter of prehistoric artifacts is situated near the base of a small valley which overlooks the Missouri River valley to the south. It is slightly removed from an old Missouri River terrace which is 120-160 feet above the pre-dam Missouri River level. The site is located just above (north of) the junction of two washes on a nearly level portion of a low, narrow ridge.

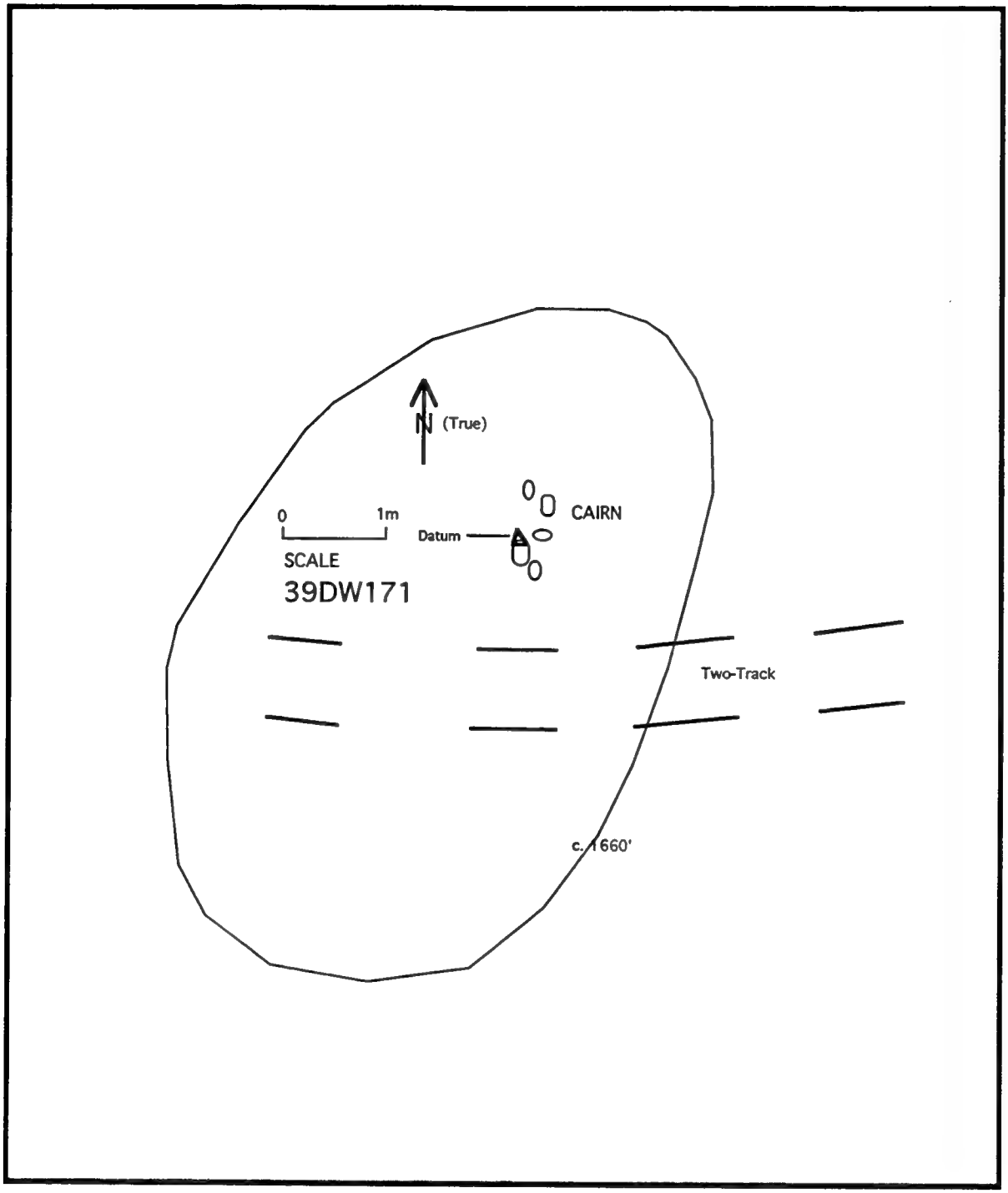


Figure 11. Sketch map of site 39DW171.

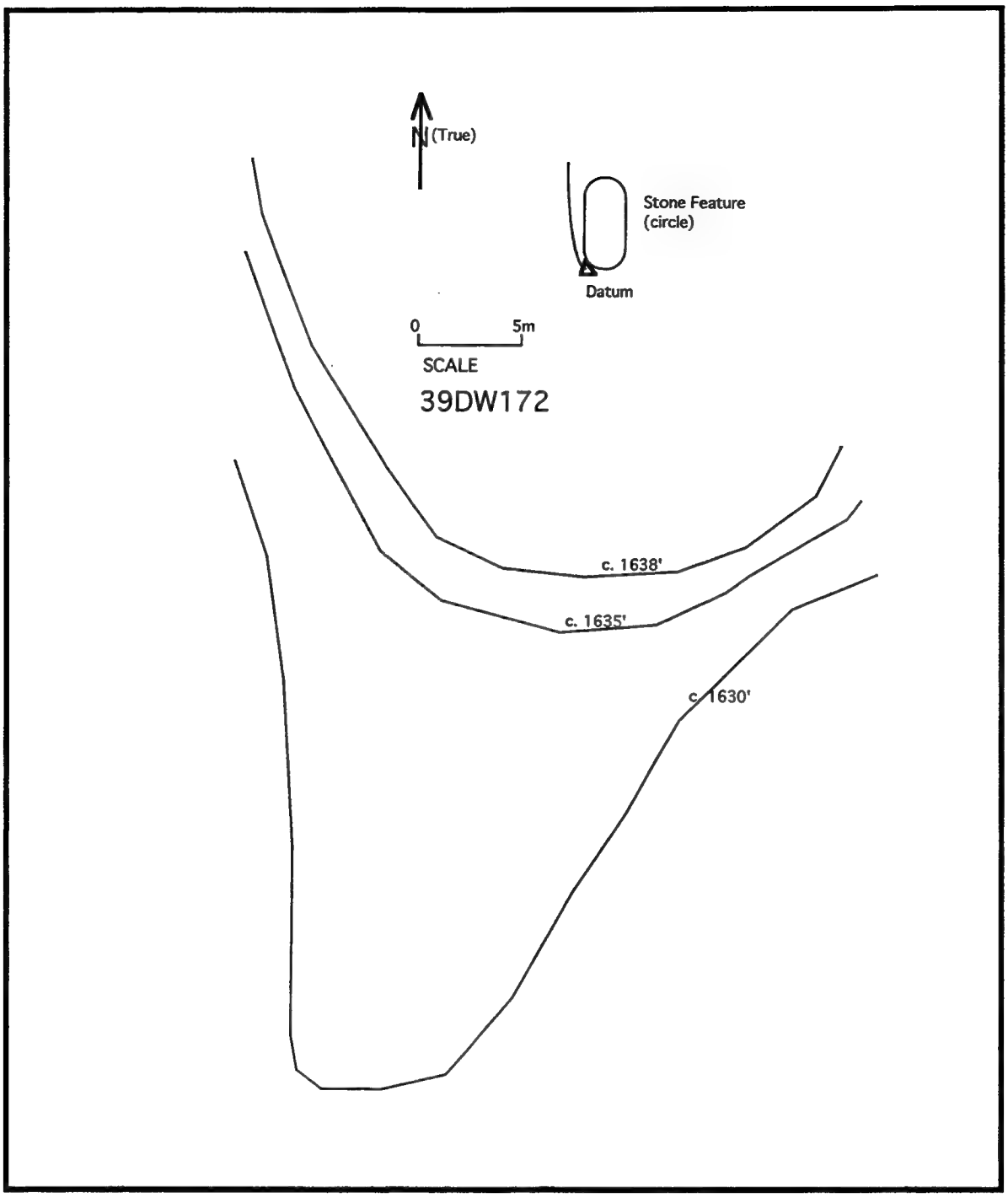


Figure 12. Sketch map of site 39DW172.

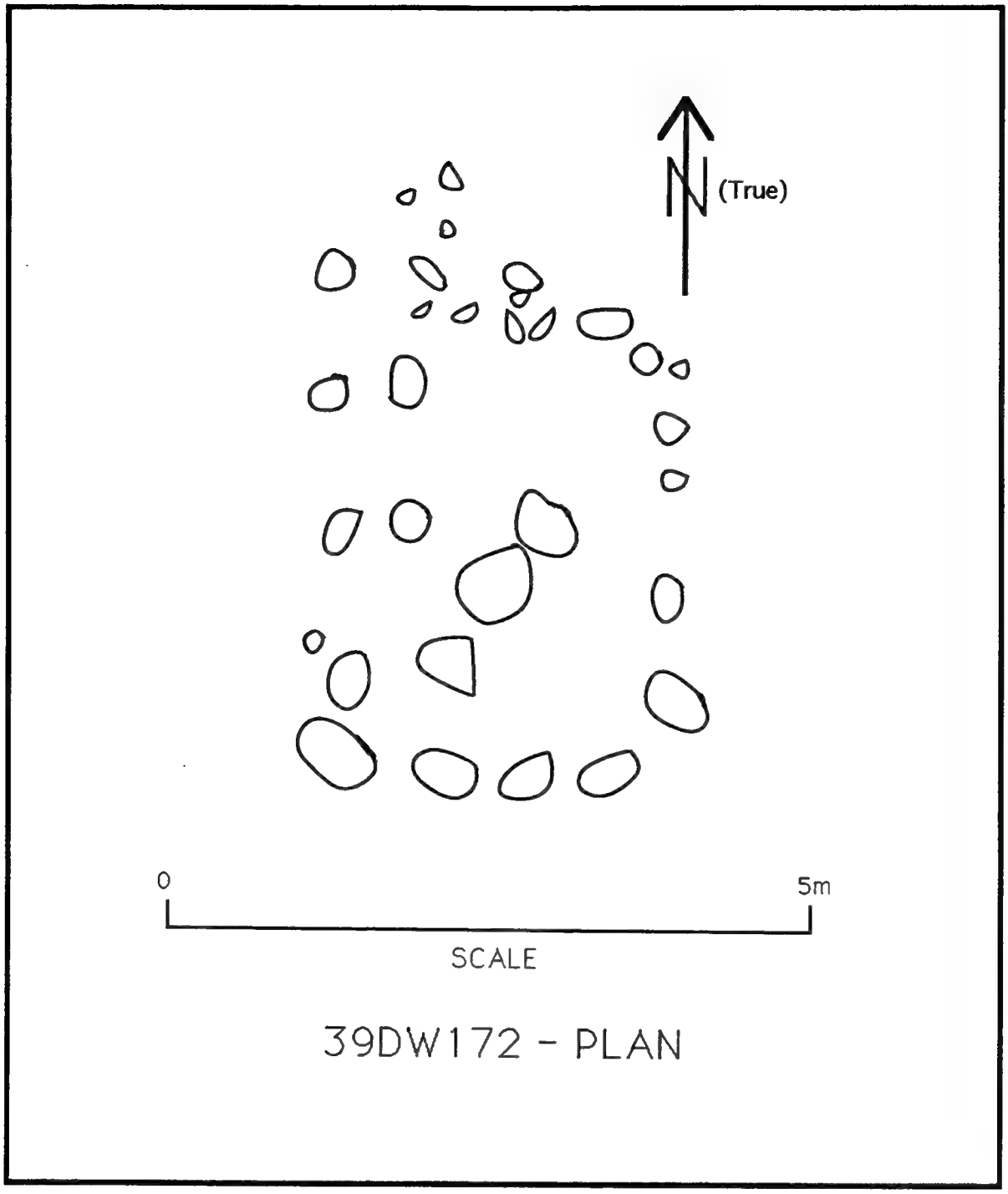


Figure 13. Plan of stone circle at site 39DW172.

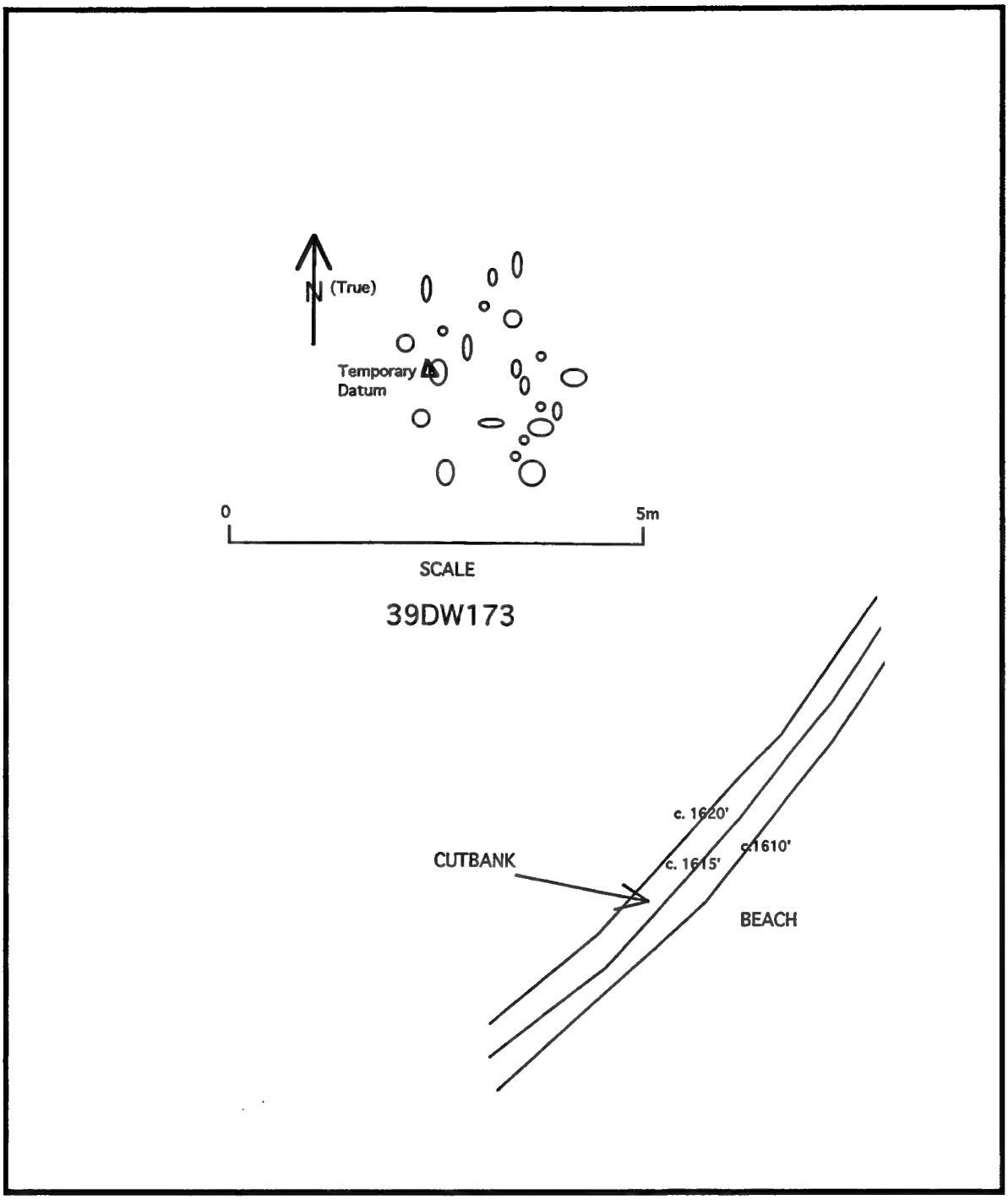


Figure 14. Sketch map of site 39DW173.

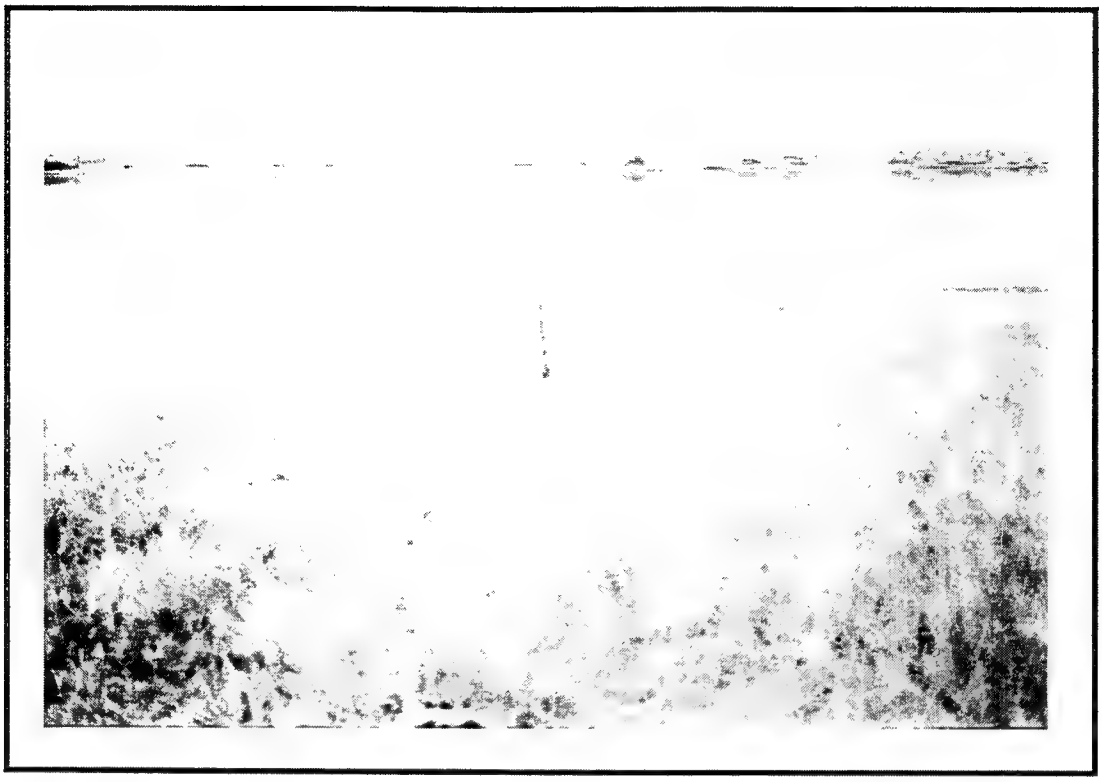


Plate 7. Overview of site 39DW172, facing SW.

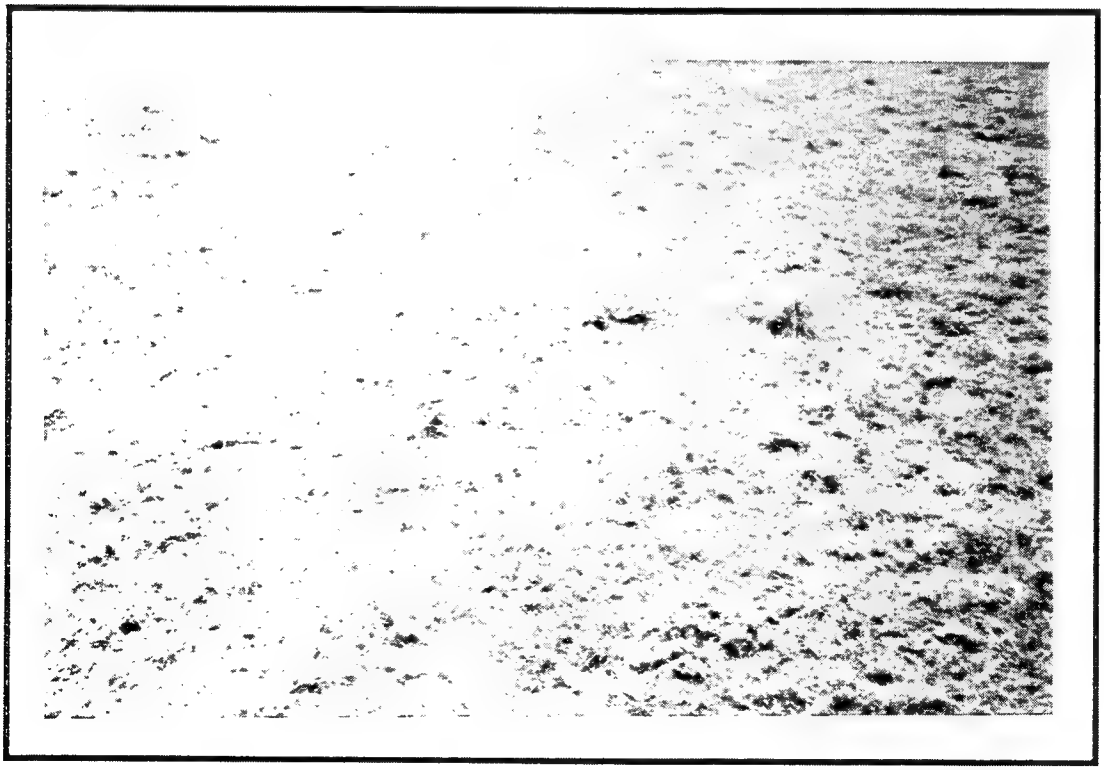


Plate 8. Overview of site 39DW173, facing NW.

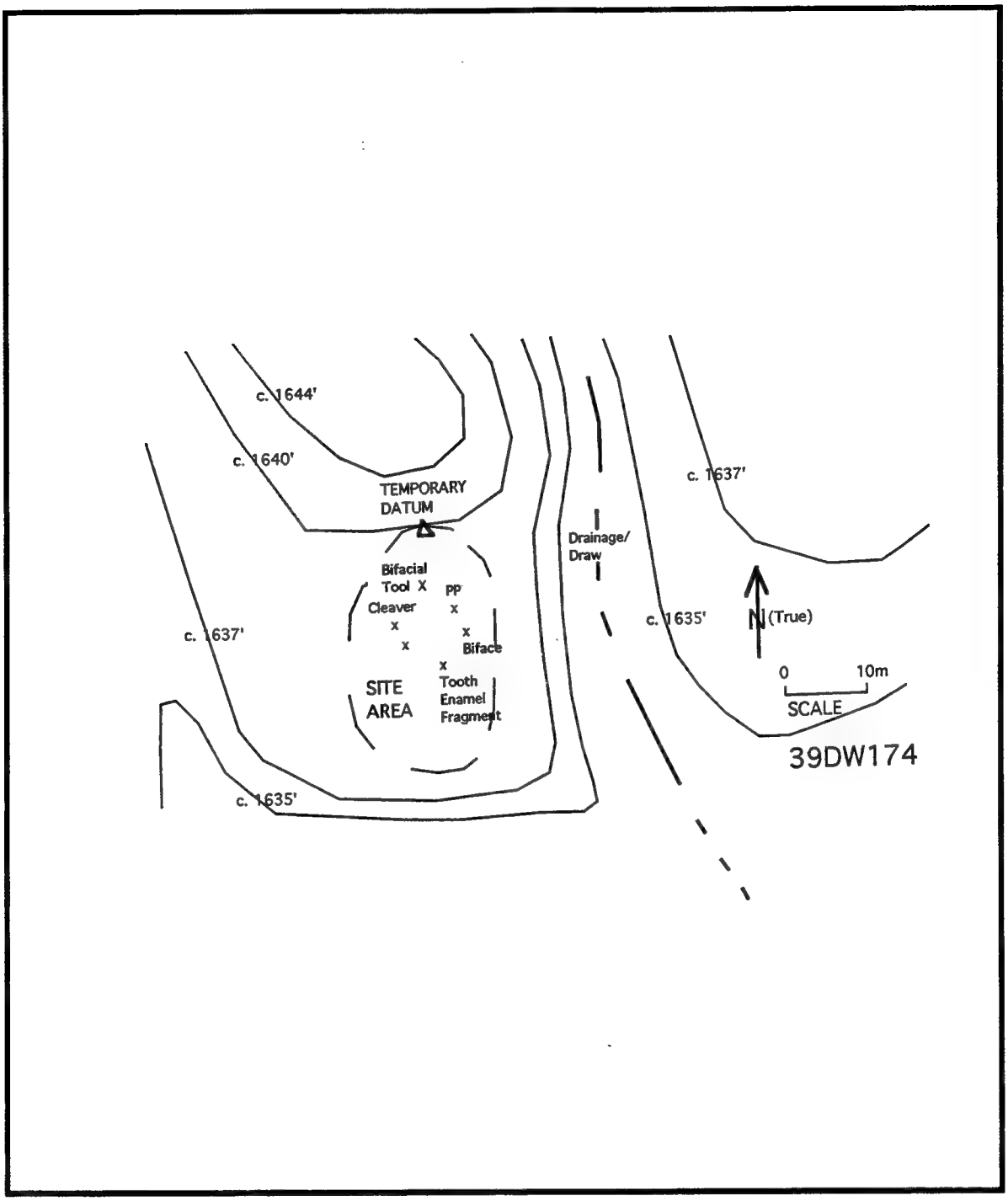


Figure 15. Sketch map of site 39DW174.

Plate 9. Overview of site 39DW174, facing NE.

The artifacts were scattered over an area approximately 30 m N-S by 18 m E-W (540 square meters). The complex consists of a lithic and bone fragment scatter which includes a minimum of 79 items. These items include a Late Prehistoric period corner(?)-notched projectile point fragment, three biface fragments, eight core fragments, four retouched flakes, one utilized flake, five+ fire-cracked rocks (FCR), two grooved maul fragments, and 48 items of lithic debitage. Seven bone fragments, some of which may not be associated with the site, were also noted. Ten items were collected.

The site appears to be largely outwashed or deflated. The elevation is 1634 ft. amsl. The soil mapped for the area is Dupree-Sansarc Clay (DsE). This site was visited by the geomorphologist on May 27, 1992. The management status (eligibility for nomination to the National Register of Historic Places) is not currently known and further evaluation is recommended.

Site 39DW175 - Bull Release (Figure 16; Plate 10)

Site 39DW175 is a dense (greater than 1 item per square meter), buried prehistoric artifact scatter exposed in the cutbank of an old Missouri River terrace which is 120-160 feet above the pre-dam Missouri River level. The site overlooks the Missouri River valley to the southeast, south, southwest and west. The materials were buried in the cutbank from 0-30 cm bs and extend for an estimated 50 square meters. Artifacts included ca. 20 FCR, 30 burned and two unburned bone fragments, a chalcedony tertiary flake and three problematical flakes of shale-like material. The elevation of the site is 1623 ft. amsl. The type of soil mapped for this area is Lowry Silt Loam (LwB).

Although the site is not deeply-buried, there is the potential for relatively undisturbed deposits further back from the cutbank. This site was visited by the geomorphologist on May 27, 1992. It is extant and largely undisturbed, although the extent of the erosion that has exposed the site in the cutbank cannot be fully determined. The site is potentially eligible for nomination to the National Register of Historic Places. Additional evaluation of the information content of this site is recommended.

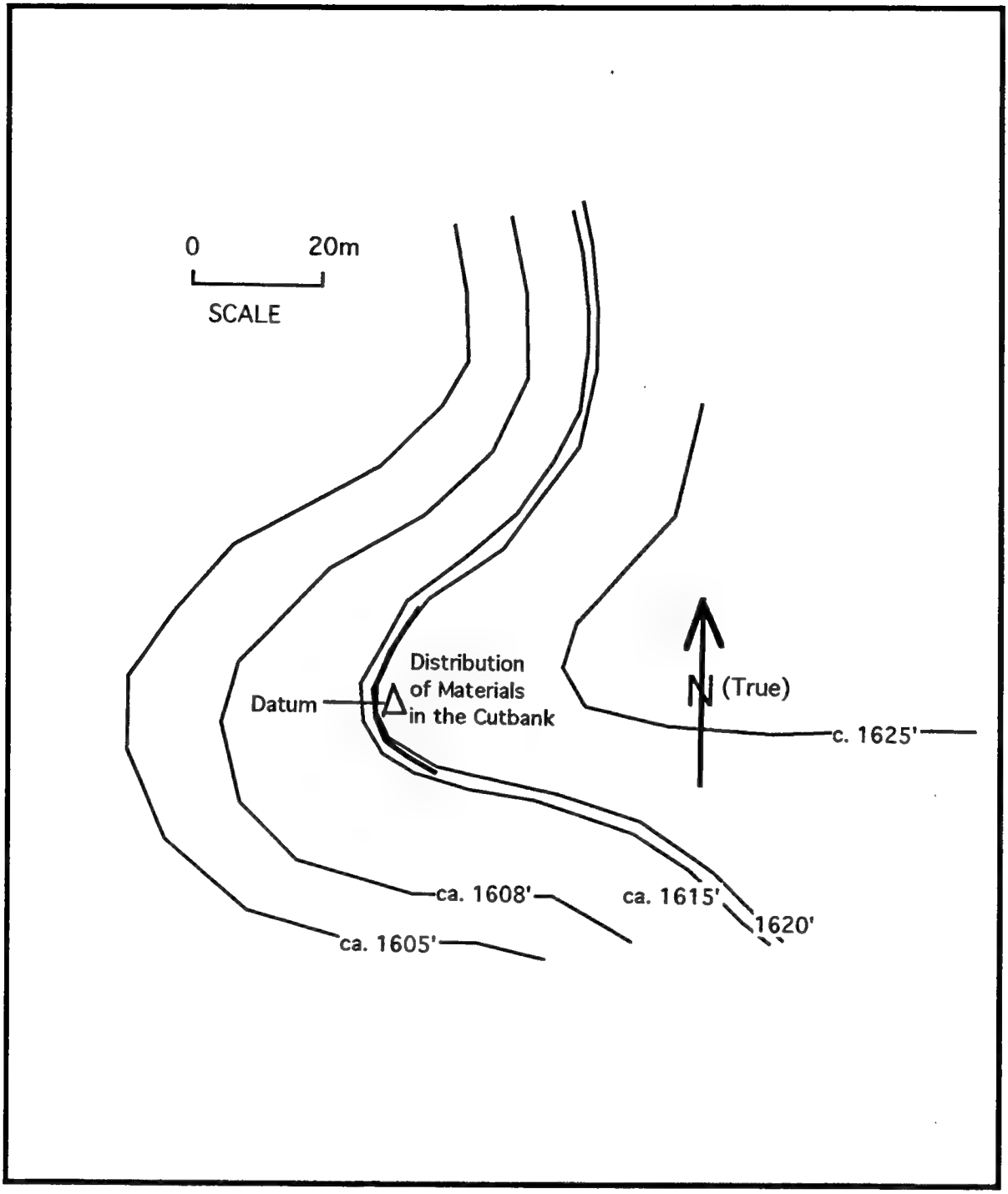


Figure 16. Sketch map of site 39DW175.

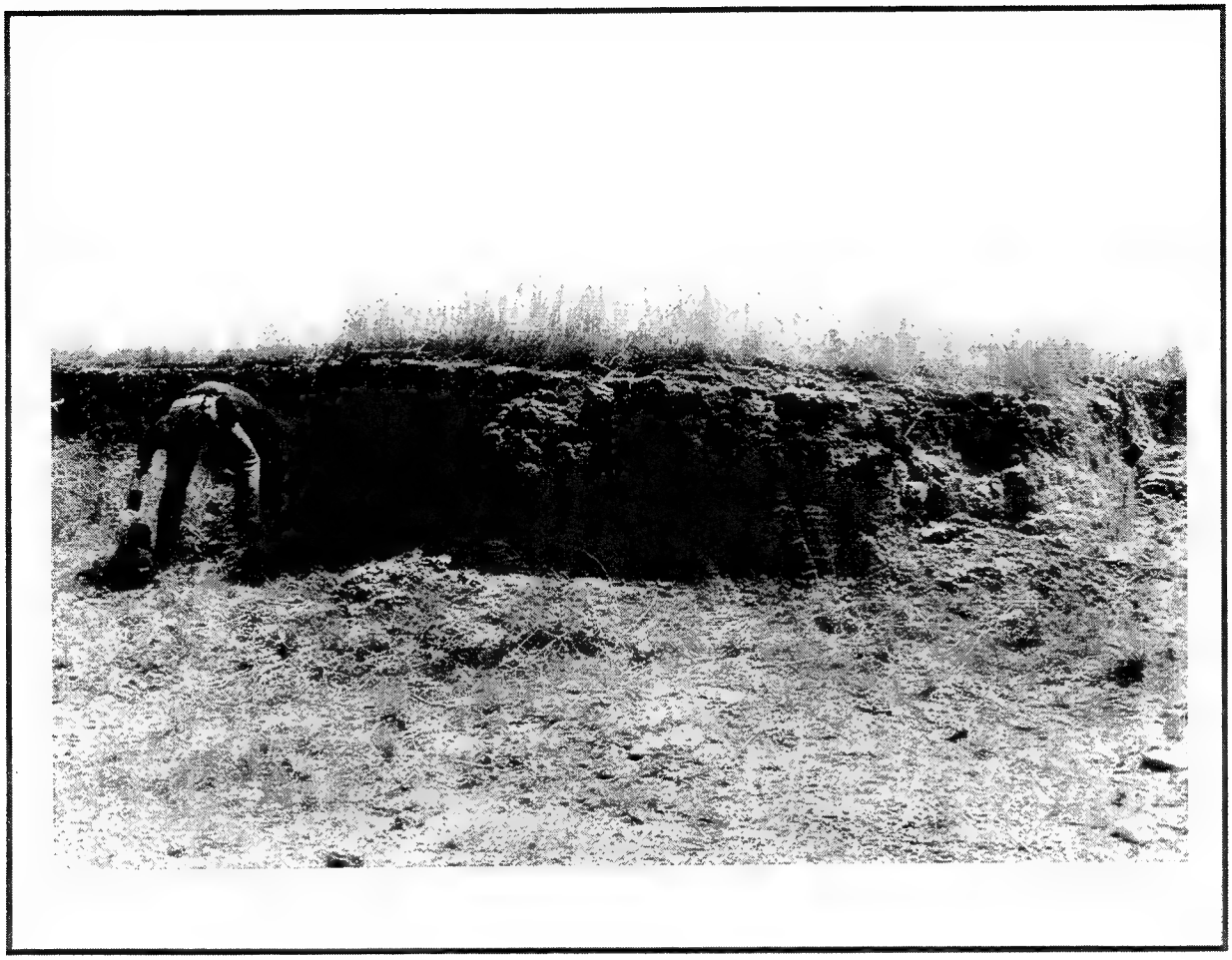


Plate 10. Overview of site 39DW175, facing E.

10. HISTORIC SITE TYPES AND PALEONTOLOGICAL FINDS

Both historic site types and paleontological finds are discussed in this section as they reflect similar considerations.

Recent Historic Sites

Four recent (less than 50 years old) historic localities were recorded during the survey. These sites are too recent and of too little significance to require the assignment of permanent trinomial site numbers and do not require being treated in the manner associated with that characterization. They are not considered eligible for nomination to the National Register of Historic Places and no further work is recommended. These localities include a farm/dam depression (HS1) inundated by the reservoir; a depression associated with an extant gravel pit and bulldozer cut (HS2); a YMCA camp with five wood frame structures, a concrete block structure, garbage pits and a backstop (HS3); and several extant gravel pits (HS4).

Management Considerations - Recent Historic Sites

The historic features, facilities and remains are considered too recent to require management under the scope of this survey.

Historic Isolated Finds

Ten historic isolated finds were recorded by this survey and are summarized in Table 6.

Management Considerations - Historic Isolated Finds

Historic isolated finds are not considered significant. However, the overall information provided by these occurrences does contribute to the interpretation of regional culture history and past landscape utilization. None of the historic isolated finds listed above are associated with other historic features for which management considerations have been discussed. Isolated Find No. IFT4, a buried bone fragment, could be historic or prehistoric in age.

Paleontological Finds

Three paleontological finds were recorded by this survey and are summarized in Table 6.

Management Considerations - Paleontological Finds

The paleontological finds recorded by this survey are judged to be poorly-preserved and too common to require any special management considerations.

Table 6. Summary of Isolated Finds and Paleontological Finds.

Field Number[1]	Quadrangle Map	Description
IFE1	No Heart Creek SW	4 tapered posts
IFE2	No Heart Creek SW	Bullet
IFE3	No Heart Creek SW	Sunken boat
IFE4	No Heart Creek SE	Buried cow skull
IFE5	No Heart Creek SE	Hammerstone
IFE6	No Heart Creek SE	Recent fireplace
IFE7	Artichoke Butte NW	14 tapered posts
IFE8	Patch Skin Buttes SW	Chalcedony secondary flake
IFT1	No Heart Creek SW	7-UP bottle neck and rim
IFT2	No Heart Creek SW	Possible granitic FCR
IFT3	No Heart Creek SW	Hammerstone
IFT4	No Heart Creek	Buried bone - buried soils
IFT5	No Heart Creek SE	Granitic 'blade'
IFT6	No Heart Creek SE	Two posts, wooden 4x4s set in concrete - USACE markers
IFT7	Artichoke Butte SW	Rubbish tip
IFT8	Artichoke Butte SW	Recent campsite
IFT9	Patch Skin Buttes SW	Reported grooved maul
IFT10	Patch Skin Buttes SE	Retouched flake
IFT11	Patch Skin Buttes SE	Tongue River Silica primary flake
P1	No Heart Creek SW	Paleontological remains - scattered over an area 5 m x 8 m x 5 m
P2	No Heart Creek SW	3 vertebrae - (paleontological)
P3	Patch Skin Buttes SE	Several vertebrae - (paleontological)

[1] IFE refers to isolated finds located by Edward J. Lueck, while IFT indicates isolated finds located by Timothy V. Gillen.

11. LABORATORY ANALYSIS

Analyses were performed on the data generated by the literature and records search and the field survey. The analyses represent standardized procedures utilized by AL. These procedures are based on current practices in the discipline which are specifically aimed at providing readily comparable data sets.

Prehistoric lithic materials were analyzed by Edward Lueck and L. Adrien Hannus. The collection of faunal materials was minimal. Diagnostic materials collected during the survey and recorded during the literature search were studied with the goal of identifying site component(s). The analyses included measurements and descriptions of diagnostic material (projectile points) with comparative studies for each item.

Morphology was addressed by accomplishing a series of measurements - minimally including length, width and thickness. Morphology was further documented by providing exact scale (1:1) technical illustrations, with cross-sections, of each specimen. For the projectile point, 12 discriminate dimensions were measured and four form observations were recorded (following Ahler 1971). The projectile point was compared with similar examples from other Plains sites to establish cultural/technological association.

All lithic material was evaluated for utilization. Descriptions of utilized lithic materials (both chipped and ground stone) were undertaken using both macro- and microscopic examination techniques. Patterns of wear - edge dulling, polish, percussion/abrasion - were recorded and other indicators of use, such as heat treatment, were noted. Production techniques were examined through the inspection of flake scars and striking platforms (and debitage), and by recording the presence/absence of cortex. These evaluations are directed at an expanding recognition that many unretouched flakes have been utilized and then discarded (see Cotterell and Kamminga 1987); similarly, there are examples of projectile points having been reshaped, resharpened and eventually reworked to perform other functions, such as drilling or cutting tasks.

Raw material types were determined on the basis of macro- and low power microscopic observations. Material type identification follows types described in Ahler (1977). Several material types are distinctive, although some from apparently alternate sources appear to be virtually indistinguishable (e.g., Knife River Flint and Scenic chalcedony - see Nowak and Hannus 1981).

The lithic analyses are used to evaluate questions of site function, seasonality, and possibility of prehistoric trade networks and patterns.

Projectile Point

One projectile point fragment, representing one site, was recovered from the survey. The point is assignable to a Late Prehistoric chronological position. The discriminate dimensions recorded are based on the earlier work of Ahler (1971) and are utilized here as a means of standardizing the data reported. By providing standardized information in this manner, it is hoped that comparative studies will be made easier and more reliable.

The projectile point has an expanding stem form, an indeterminate base form, and an abrupt shoulder form. It is probably corner-notched and the blade form is slightly excurvate. These attributes are graphically represented in Figure 17. The point was produced on a light gray (10YR 7/1) Tongue River Silica chert.

The measurements taken on the projectile point are graphically illustrated in Figure 18. As defined by Ahler (1971), these measurements can be described as follows. Total length (A) is measured perpendicularly from the baseline to the distal blade tip. Basal contact width (B) is the maximum distance between points of tangency on the baseline. Basal center point length (C) is the distance from the baseline to the basal haft element margin, measured along the centerline. Proximal haft element width (D) is the distance between the two points, one on each

lateral haft element margin, most proximally positioned and at which the orientation of the lateral haft element margin is most nearly parallel to the centerline, measured parallel to the baseline. Proximal haft element length (E) is the average perpendicular distance from the baseline to the two points on the lateral left margins defined above. Distal haft element width (F) is the distance between two points, one on each lateral haft element margin, which are more distally located than the proximal haft element points, and at which the orientation of the lateral haft element margin is most nearly parallel to the centerline, measured parallel to the baseline. Distal haft element length (G) is the average perpendicular distance from the baseline to the two points on the lateral haft element margins defined above. Blade base width (H) is the distance between the two points, one on each lateral blade margin, nearest the baseline, measured parallel to the baseline. Shoulder to base length (I) is the average perpendicular distance from the baseline to the two points defined when measuring blade base width. Maximum width (J) is the greatest distance, measured parallel to the baseline, between any two points on the artifact. Total haft element length (K) is the average perpendicular distance from the blade/haft element division to the baseline. Maximum thickness (L) is the greatest distance, measured perpendicular to the baseline and centerline, between any two points on the artifact.

Specimen 39DW174/92-27-4 has a total length of 17.36 mm (incomplete), a distal haft element width of 7.8 mm, a blade base width of 16.09 mm, a maximum width of 16.72 mm and a maximum thickness of 3.625 mm. Other measurements are unobtainable. The specimen is assigned to the Late Prehistoric cultural/technological complex.

A description of the projectile point fragment with an illustration (Figure 19) is presented below. It is recognized that the assessment of cultural-chronological affiliations of projectile points, especially fragmentary specimens, is often tenuous and based to a large extent on the analyst's background.

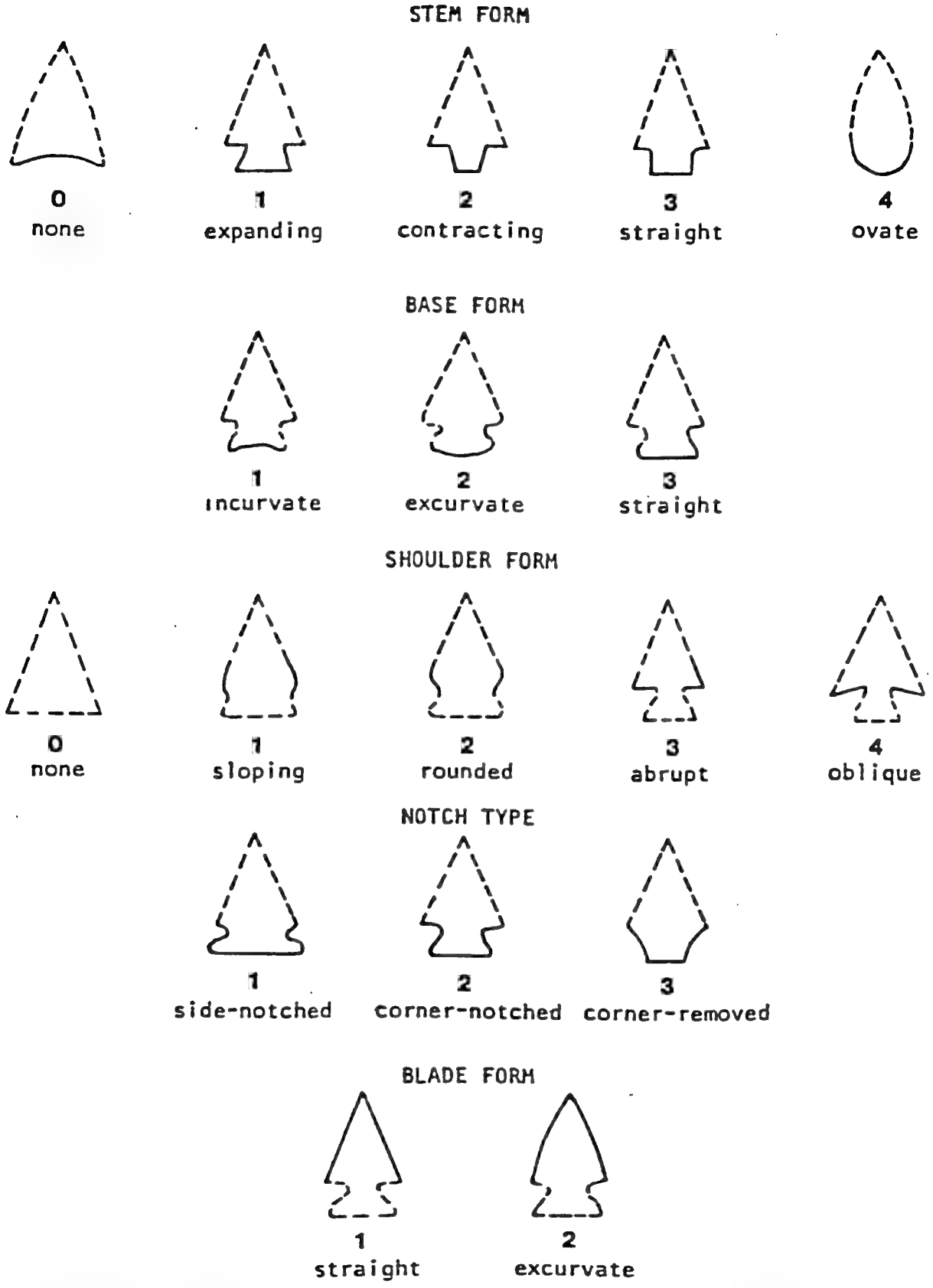
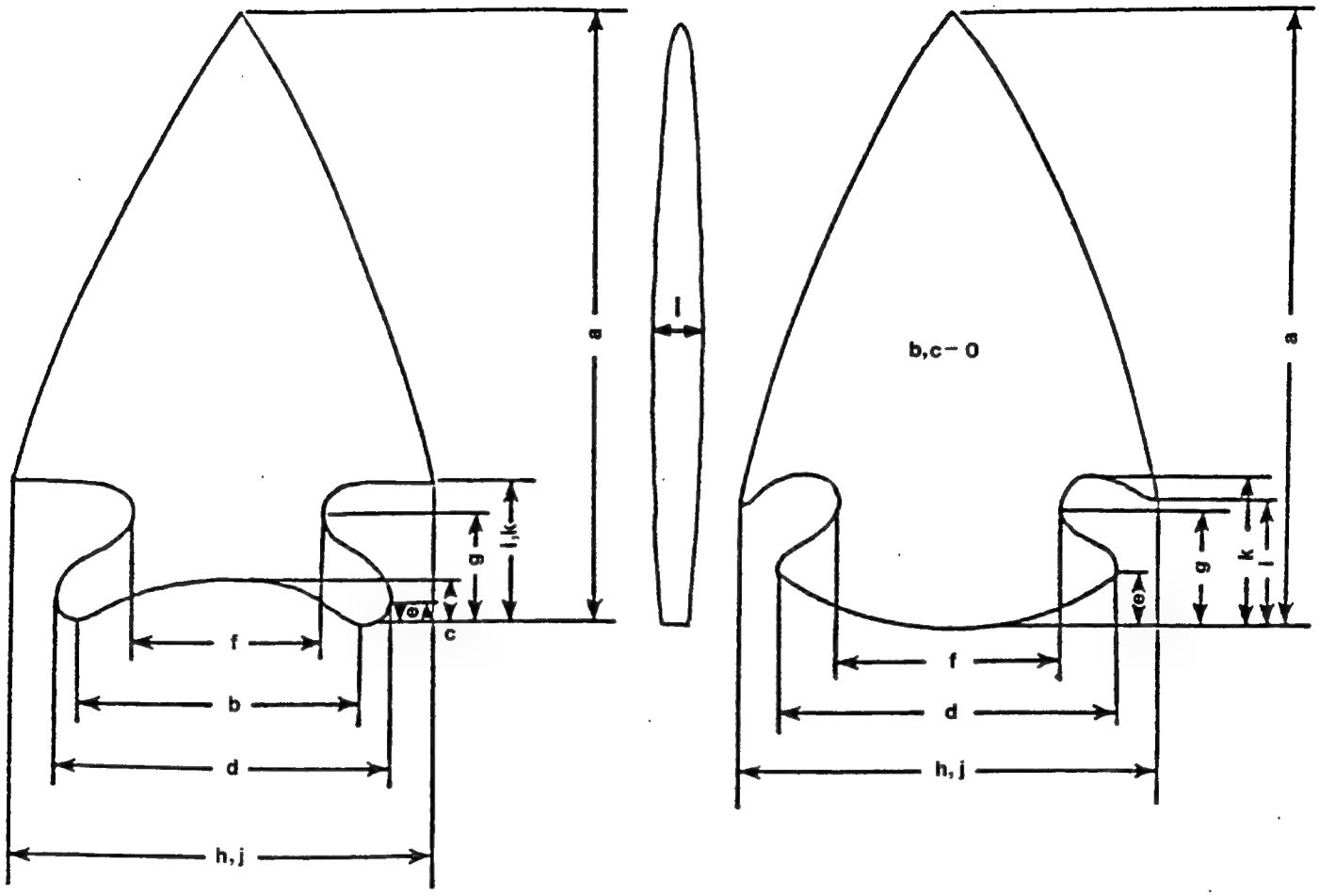


Figure 17. Graphic representation of the five nominal observations utilized in the projectile point analysis.



a. Total Length

b. Basal Contact Width

c. Basal Center Point Length

d. Proximal Haft Element Width

e. Proximal Haft Element Length

f. Distal Haft Element Width

g. Distal Haft Element Length

h. Blade Base Width

i. Shoulder to Base Length

j. Maximum Width

k. Total Haft Element Length

l. Maximum Thickness

Figure 18. Diagram of two generalized projectile point forms indicating the measurements taken in the projectile point analysis (adapted from Ahler 1971:23).

Cultural/Techno Complex: Late Prehistoric

a. Figure 19 Site and Specimen: 39DW174 (Specimen 92-27-4)

Munsell Color: Light Gray (ca. 10YR 7/1)

Measurements (mm)*

Length:	17.36	mm
Width:	16.72	mm
Thickness:	3.625	mm
Weight:	1.27	g

Description: The specimen is the midsection and stem of a corner(?)-notched projectile point. Blade form is slightly excurvate. It is produced on gray Tongue River Silica chert.

* Underlining = specimen incomplete along this dimension

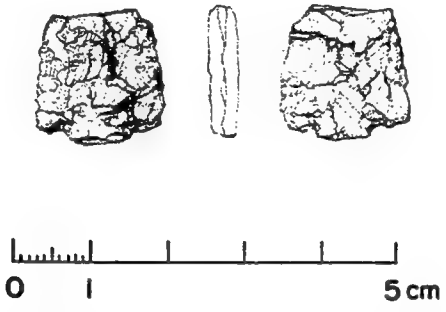


Figure 19. Sketch of specimen 92-27-4, projectile point fragment from site 39DW174.

Bifaces and Other Lithic Artifacts

A limited number of chipped and ground stone tools were observed and collected during the Dewey County survey. Most of these tools were recovered from site 39DW174. Selected items from site 39DW174 are illustrated in Figure 20 (bifaces and retouched flakes); Figure 21 (heavy bifacial cutting tool); and Figure 22 (miscellaneous tools). The only other chipped and ground stone artifacts observed during the survey were isolated finds. These finds include two hammerstones (IFE5, IFT3) and a retouched flake (IFT10). A reported grooved maul find location was also noted (IFT9).

Lithic Utilization

All collected lithic artifacts (Appendix E) were examined under a low power microscope. Details of the manufacture and use of these items are provided below. All specimens (except isolated finds) are from site 39DW174.

Specimen 92-27-1 (Figure 21)

This basalt cleaver-like item exhibits bifacial retouch and is dulled and polished along much of the retouched edge. A lighter-colored, rougher surface area represents shattering associated with a cone of force/platform resulting from the initial stages in the formation of this piece. Irregular compression rings which appear to radiate out from this point, as well as two hinge fractures which indicate the same direction of force, support this interpretation. The force appears to have wrapped around an area to the left of the cone. Several large flake scars which originate along the retouched edge are likely associated with additional thinning of this item. Projections along the retouched edge have more dulling/polish than less prominent segments of the edge.

Specimen 92-27-2 (Figure 22)

This basalt item appears to have been formed as a bi-polar split cobble by using an anvil. A bulb and roughened (presumably from preparation) platform occur on the thick end of the specimen. A recurved or S-like shape, as well as a couple of hinged flakes at the opposite end, support this interpretation. Discontinuous bifacial retouch occurs along about one-third of the sharp edge, on the edge opposite the bulb. There is dulling and what appears to be slight polish on the edge opposite of the bulb, especially on the projections. The 'best fit' method of holding this item is with the dorsal surface to the palm, with the platform under the thumb, and the fingers clasping the ventral surface. This position permits chopping with the dullest edge and scraping with the other dulled/polished edge.

Specimen 92-27-3 (Figure 20)

This biface does not reflect any dulling or polish along its edges.

Specimen 92-27-4

The fact that the planes of the two fractures (through the blades and through the stem) are similar and that there is some lipping on the stem fracture suggests that both are impact fractures. Slight dulling and polish appear to be present on the blade edges, but are relatively minor and may be associated with manufacture of the item.

Specimen 92-27-5 (Figure 20)

This pebble fragment has bifacial retouching on one of its four edges. The retouch forms a straight, sharp edge about 2 cm long. Slight polish appears to be present along part of this edge.

Specimen 92-27-6 (Figure 20)

This pebble fragment is retouched along one edge; there is steep retouch on one side of this edge which is at about a 45 degree angle to the main axis of the pebble. The retouch

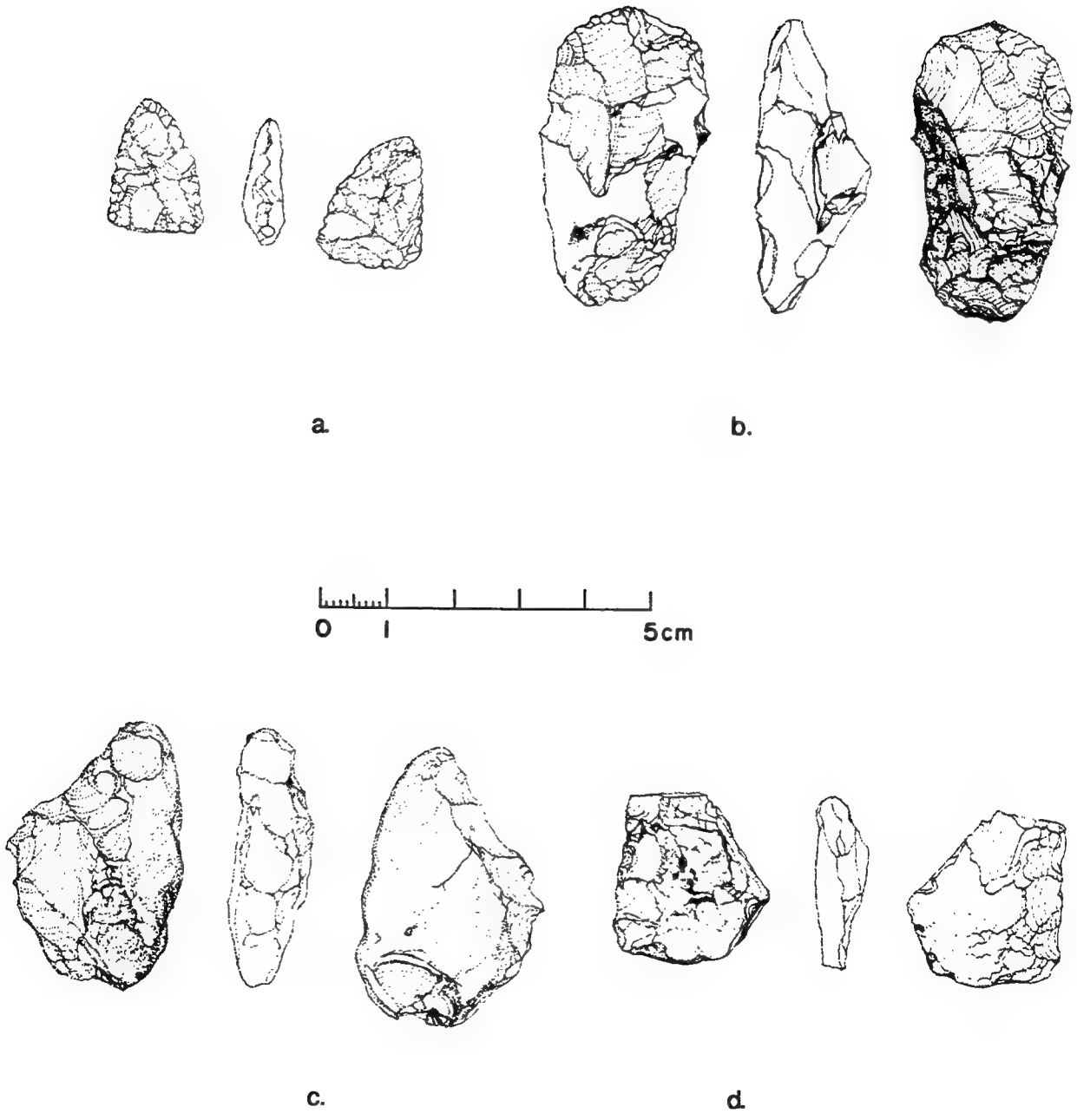


Figure 20. Bifaces and retouched flakes from site 39DW174. a: biface (92-27-3); b: biface (92-27-7); c: retouched flake (92-27-6); d: retouched flake (92-27-5).

Figure 21. Heavy bifacial cutting tool from site 39DW174 (92-27-1).

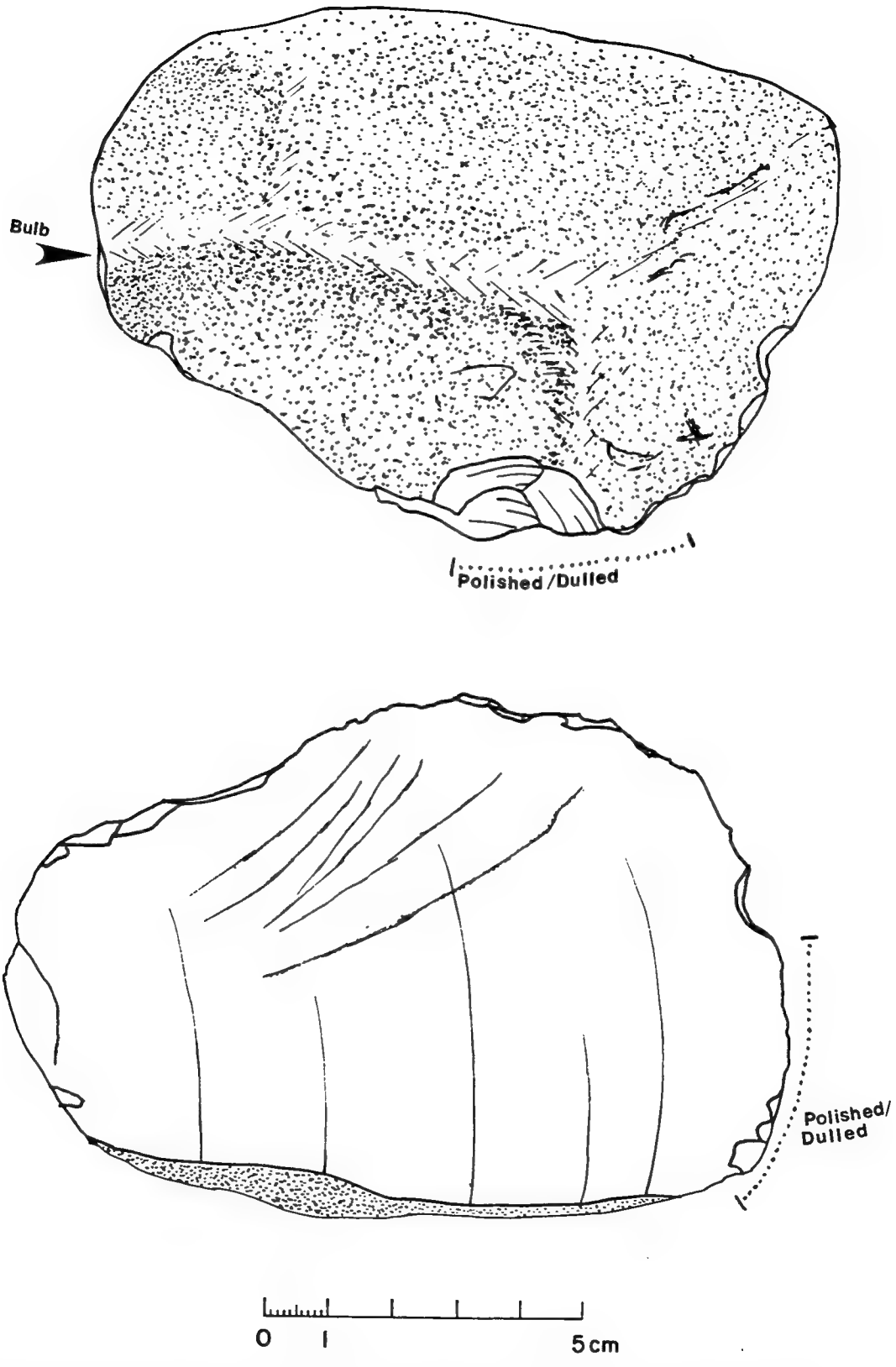


Figure 22. Heavy retouched primary flake from site 39DW174 (92-27-2).

on the opposite side of this edge is sharp and runs at an angle nearly parallel to the main axis of the pebble. Some slight dulling extends for about 0.5-0.75 cm along a small, concave portion of the retouched edge. A flake scar is present on the end opposite of the retouched edge (a test flake?).

Specimen 92-27-7 (Figure 20)

About 30 percent of one side (or about 15 percent of the total surface of the item) of this core/tool exhibits some cortex. There appears to be some slight dulling and polish on a portion of one end for a length of about 2 cm on a convex edge.

Specimen 92-27-8

This core has bifacial flaking applied to a primary flake; approximately 55 percent of the dorsal surface is cortex. There is a bulb and some adjacent fracturing which runs parallel to the apparent direction of the force through the bulb. There does not appear to be any wear on the item.

Specimens 92-27-9 and 92-27-10

The longest axis on each of these grooved maul fragments is at a right angle to the groove, or conversely, parallel to the direction of force if the items were used as hafted hammers. This would suggest that they were fractured/shattered during use as hammers.

Specimen IFE5

This item has 8+ pecks on one end and 3+ pecks on the opposite end.

Specimen IFE8

This item has nibbling along the only acute angled, and sharp, slightly concave edge.

Specimen IFT3

This somewhat problematical cobble has one side and a few elevated areas which are smoother than the rest of the item. The smooth side has a good probability of having been ground smooth; it covers about 20 percent of the surface and forms a more or less even plane laterally. It also has a grainy, roughened surface, as if from grinding of dry material.

Specimen IFT5

This item is three-sided in cross-section and blade-like. Two of the sides are rough-grained, while the other is generally smoother (as if from weathering) and is bleached out. It appears unnatural for the type of material; no other intentional fracturing is obvious.

Specimen IFT10

This item is a retouched primary flake tool, but has limited flaking. Except for retouched areas, the dorsal surface is glossy and polished, as from weathering, and the projecting ridges are battered, as from tumbling. Its general morphological appearance is similar to that of a transverse scraper, although it has steep retouch, and possibly some nibbling, on only part of the distal end. An intentional beak appears to have been formed on the left side of the distal end. Purposeful manufacture of the beak is suggested by retouch on both sides, as well as the removal of one flake from the ventral surface beside it (helping to form it).

Specimen IFT11

This item is a primary flake/blade fragment. There are no obvious modifications or intentional features. However, a portion of the blade, including a platform, could easily have spalled away.

Temporal/Cultural Affiliation

Using data from the analysis of the projectile point and site types, only one site can be assigned to a cultural/temporal affiliation. Site 39DW174 is categorized as Late Prehistoric.

Locational Analyses

A substantial body of information now exists about the locations of archeological sites alongside Lake Oahe. Summaries have been provided for Stanley and Dewey counties (Lueck et al. 1989; Winham and Lueck 1987), and for Potter and Sully counties (Falk et al. 1986), to name several. In all of these studies it has been noted that the data being used are biased by the survey area, in effect sampling the landscape in a non-random way. River bottom areas are inundated and the upland plains are largely outside the survey area. The data are derived primarily from a narrow strip of land that includes the river breaks and more broken topography. A review of an entire "landscape" region is needed, but is beyond the present scope-of-work.

In similar studies in North Dakota, Leaf (1976:60) presented criteria considered to reflect a hunting camp locality. These criteria were 1) protection from severe weather; 2) easily accessible supplies of water; 3) fairly level ground surface; and 4) proximity to game trails. Coulees were considered natural avenues for animal movements. Johnson (1976) added presence of a fuel supply, presence of chipped stone quarry material, and view of surrounding terrain to this list in his study of site location. The limited studies performed by Noisat et al. (1986) indicate that some factor besides access to multiple resource types determined aboriginal site locational strategies. Noisat et al. go on to comment that because of the highly diverse, but spatially compact, distribution of resources, any randomly selected location would provide easy access to all resource types, yet the settlement pattern is anything but random.

All of the prehistoric sites (artifact scatters, stone circles and stone cairn sites) recorded during the current Dewey County survey occur on the edge of the same Missouri River terrace. This terrace is 120-160 feet above the Missouri River level in 1951. The terrace is basically in an upland grassland ecosystem. Table 7 gives the number and percentage of acres associated with each soil type, and a list and the percentage of prehistoric sites, isolated finds, historic vicinities and paleontological finds for each soil type in the project area. Table 8 provides summaries of site areas, associated soil types, landforms, ecosystems, site elevation, view/visibility, and distance from water for all of the prehistoric sites. This may be contrasted with the ridges and ridge spurs which are the dominant landforms alongside the Missouri River; upland grassland is the dominant ecosystem. Cairns may reflect markers, perhaps visible from all directions.

Given the above information, it appears that the distribution of prehistoric sites is more affected by the distance from the Missouri River than by type of landform and other factors.

Table 7. Number and Percentage of Acres and a List and Percentage of Prehistoric Sites, Isolated Finds, Historic Vicinities and Paleontological Finds for Each Soil Type in the Project Area.

KEY: PRE = Prehistoric; HIST = Historic; PALEON = Paleontological.

Soil Type	Soil Name	No. Of Acres	Percent	Sites/Isolated Finds/Recent Historic Features/Buried Soils	
				List	Percent
Pw	Promise-Swanboy Clays	163.0	1.00	IFT4? (PRE?)	11.00
Sw	Swanboy Clay	130.5	0.80		
Sy	Swanboy-Slickspots Complex	59.0	0.40		
PrB	Promise Clay	106.0	0.69		
SaE	Sansarc-Dupree Clays	1,651.0	10.50	IFE4(HIST); IFT2(PRE)	10.00 11.00
SbE	Sansarc-Opal Clays	4,939.5	31.40	39DW171 (PRE), 39DW172 (2/3)(PRE) 39DW173 (2/3)(PRE) IFE5(PRE); IFT6(1/2) (HIST); HS2(HIST); P3(PALEON)	38.78 11.00 5.00 25.00 33.00
DsE	Dupree-Sansarc Clay	1,133.5	7.20	39DW174 (PRE); IFE8(PRE); HS3(HIST), HS4(HIST); Buried Soil	16.74 11.00 50.00 50.00
ScF	Sansarc-Shale Land Complex	2,256.0	14.33	39DW170 (PRE); IFT1(HIST); IFT5(PRE)	16.74 10.00 11.00
Sh	Shale Land	4,689.0	29.80	IFE1(HIST), IFE2(HIST), IFE3(HIST), IFE7(HIST), IFT7(HIST), IFT8(HIST); IFT3(PRE); HS1(HIST); P1(PALEON) P2(PALEON)	60.00 11.00 25.00 66.00

Table 7 (cont.)

Soil Type	Soil Name	No. Of Acres	Percent	Sites/Isolated Finds/Recent Historic Features/Buried Soils	
				List	Percent
CsC	Chantier-Shale Land Complex	15.0	0.09		
SbC	Sansarc-Opal Clays	26.0	0.17		
ChB	Chantier Clay	9.0	0.06		
DoB	Dupree-Opal Clays	66.5	0.40	IFT9(PRE)	11.00
HsB	Hurley-Slickspots Complex	11.0	0.07		
SdC	Schamber Gravelly Sandy Loam	9.0	0.06		
LwB	Lowry Silt Loam	47.0	0.30	39DW175 (PRE); IFT10(PRE), IFT11(PRE)	16.74 22.00
AgB	Agar Silt Loam	36.0	0.23	39DW172 (1/3)(PRE) 39DW173 (1/3)(PRE) IFE6(HIST), IFT6(1/2) (HIST); Buried Soil	11.00 15.00 50.00
Unclassified	Unnamed	391.0	2.50	IFT4? (PRE?)	11.00
Totals		15,738.0	100.00	5 Sites; 10 HIST IF; 9 PRE IF; 4 HS; 2 Buried Soils; 3 PALEON	100 - Sites 100 - HIST IF 100 - PRE IF 100 - HS 100 - Buried Soils 100 - PALEON

Table 8. Summary of Site Areas, Associated Soil Types, Landforms, Ecosystems, Site Elevation, View/Visibility, and Distance From Water For All Prehistoric Sites.

Site Number	Area (sq. m)	Soil	Landform	Eco-system *	Elevation (ft. amsl)	View (°/dis-tance)	Distance to Water (m)
39DW170	135.00	ScF	Valley Terrace	Terraces	1632	360/ 1-4 mi.	408
39DW171	1.00	SbE	Valley Terrace	Terraces	1665	270/ 2-4 mi.	264
39DW172	14.21	SbE/ AgB	Valley Terrace	Terraces	1630	360/ 1-4 mi.	552
39DW173	6.55	SbE/ AgB	Valley Terrace	Terraces	1625	270/ 1-4 mi.	480
39DW174	540.00	DsE	Valley Slope	Upland Breaks	1634	90/ 0.25-3 mi.	1080
39DW175	50.00	LwB	Valley Terrace	Terraces	1623	290/ 1-4 mi.	480

*Definitions:

Terraces: "Ecosystem composed of river and stream terraces which were once former bottomland and flood plains but are now above the present water level. Vegetation consists of dwarf sage, shrubs, wheatgrass and other grasses, thread leaf sedge, and various forbs" (from Snortland et al. 1989:22).

Upland Breaks: "Hilly and steep uplands characterized by bedrock-capped, small, rounded hills and vegetated primarily by little bluestem grass" (from Snortland et al. 1989:23).

12. GEOMORPHOLOGICAL INVESTIGATIONS

Three techniques were implemented to evaluate the geomorphological aspects of the Dewey County project. These are described below.

1) Field observations were compiled by the project geomorphologist, Brian T. Tracy. Tracy visited the project area, recorded a cross-section of geomorphic circumstances and provided a number of site and non-site specific interpretations.

2) Shovel testing or examination of cutbanks was accomplished at each site. The shovel tests or cutbank observations provided a limited examination of the nature, depth and integrity of sites exposed on the surface and/or in cutbanks. Cutbank observations in non-site areas recorded a number of areas of deep loess/soils with a relatively high potential for deeply-buried cultural deposits.

3) A study of soil type distributions from published soil descriptions (Kalvels and Boden 1979) was accomplished and modified by field observations. Soil type distributions shown on published maps (Soil Survey of Dewey County, South Dakota Kalvels and Boden 1979) were utilized to identify areas with a potential to contain deeply-buried cultural deposits of greater age.

Each of the methods used to address the geomorphological aspects of this project are described in greater detail below. Tracy's report is presented first and is followed by a summary of the results of the examination of the soil maps.

Holocene Loess Deposits With Potential For Buried Cultural Materials In Dewey County, South Dakota From The Forest City Recreation Area To The Cheyenne River
By Brian T. Tracy

Introduction

This report presents the findings of a reconnaissance level geomorphological evaluation of a survey area located in Dewey County, South Dakota, along the west bank of the Oahe Reservoir from the Forest City Recreation Area to the mouth of the Cheyenne River (Figure 23). The report is the result of background research and a relatively short amount of field time (2.5 days) to examine geological deposits in the survey area. This work included: 1) geomorphic analysis of topographic maps and county soil maps, 2) field reconnaissance mapping of natural cutbank exposures, and 3) review of previously published regional reports which discuss radiocarbon dates, archeological sites, and geomorphology.

The evaluation of the survey area was undertaken between May 26 and May 29, 1992. Since this geomorphologic study was undertaken after the archeological survey had been completed, it was possible to select areas where buried soils had been observed and where sites had been located. The investigation included six locations within the study area. The objective of the study was to identify areas of Holocene loess deposits with potential for buried cultural materials. Geomorphic observations at the six locations and of the remaining survey area follow the discussion on regional Quaternary Geology.

Study Area

The locations are situated along the west bank of Lake Oahe in the southeastern portion of Dewey County. Figure 23 identifies the locations included in the study. The Oahe Reservoir water surface elevation is identified as 1617 ft. above mean sea level (amsl) on

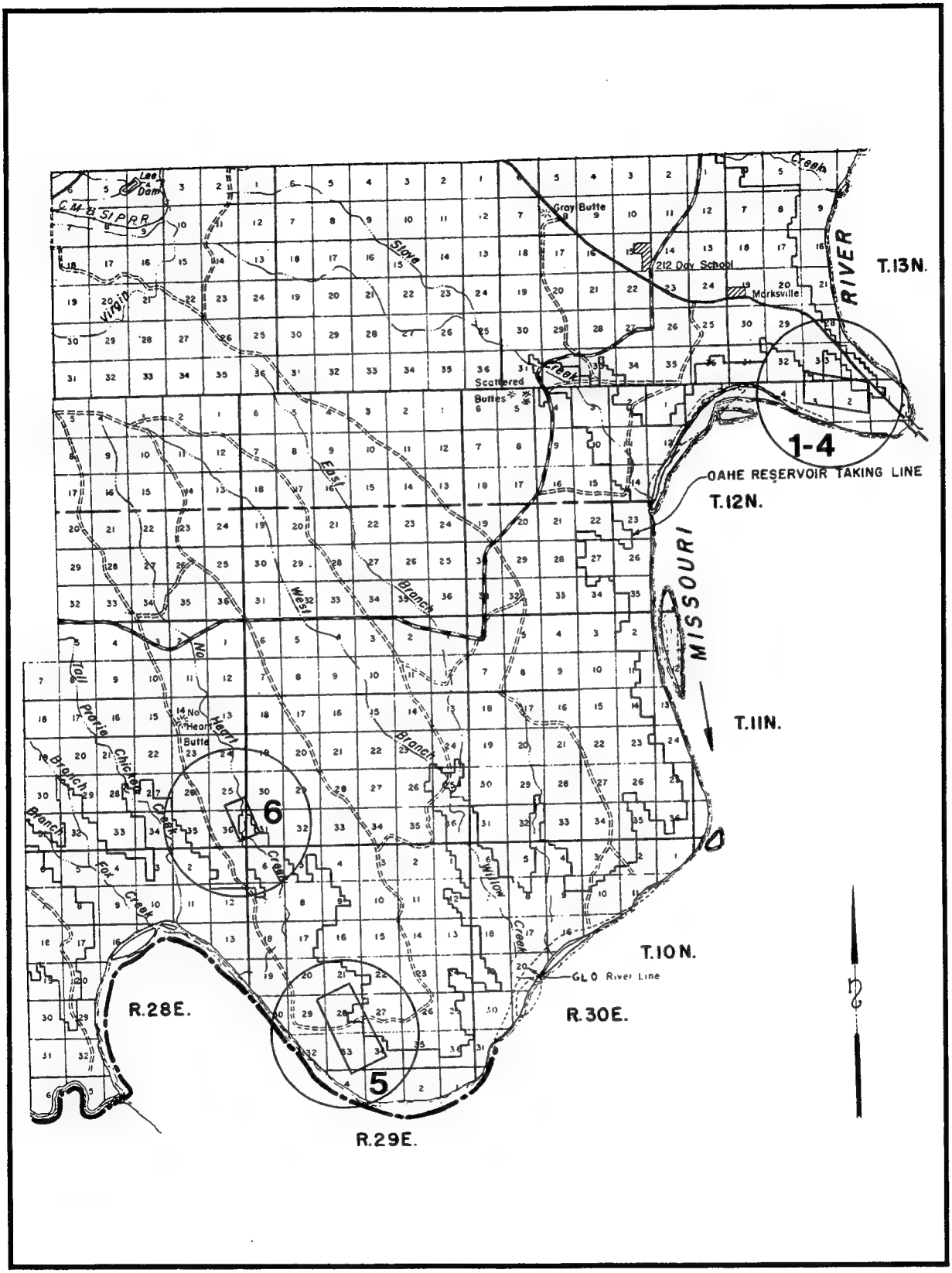


Figure 23. Map of survey area between the Forest City Recreation Area and the Cheyenne River along the west bank of the Oahe Reservoir. Locations 1-6 are identified.

U.S. Geological Survey 1:24,000 topographic maps; however, during the period of fieldwork the reservoir levels were approximately 20 feet below this elevation. Since the initial inundation of the Missouri River, forming the reservoir in 1963, the water level stage has shown annual fluctuations of lows of approximately 1600-1605 ft. amsl to highs of approximately 1610-1618 ft. amsl (Brakenridge and McCready 1988).

The climate of the area is subhumid and continental. Average annual precipitation totals 16 inches, whereas snowfall averages 34 inches. Winter (January) average temperature in Pierre, South Dakota is 19°F and summer (July) average temperature is 72°F. The heaviest one-day rainfall during the period of record at Pierre was 3.52 inches on August 2, 1953. During the period of fieldwork, the temperature was in the mid-70s with a persistent wind blowing off the reservoir from the southeast. According to White (1987), the prevailing wind direction in the spring and summer is from the southeast, then shifts in direction during late autumn-winter to occur from the west-northwest.

The undulating and dissected topography of the uplands, interfluves and draws supports prairie grass species. Forest vegetation consisting of cottonwood and willow trees is supported in drainage depressional areas and near the banks of the reservoir. The locations in this study were primarily vegetated with prairie grass, sage brush and cactus species.

The local underlying bedrock of the study area is characterized by several relatively similar members of the Pierre Shale. The Pierre Shale is a weak and easily erodible Cretaceous black shale. As a result of the erodible shaley bedrock, the banks of local tributaries to the Missouri River (Lake Oahe) are composed of fine-grained sediment transported by surface runoff down the hillslopes and then reworked by the dissecting streams. In addition to the Pierre Shale and fine-grained sediments, gravel and coarse sand deposits of approximately Late Pleistocene age are evident in reservoir cutbanks.

Quaternary Deposits and Soils Along the Study Reach

The following interpretation of the regional Quaternary depositional products and landforms is based on previous research and regional reports. It briefly discusses the events and processes which contributed to shaping the present-day middle Missouri River trench. Figure 24 shows the regional physiographic landscape and preglacial valleys in relation to Lake Oahe. The Missouri River closely borders the westward limit of the Wisconsin continental glacial lobes, and the Late Pleistocene chronology of that river was affected by the melt history of this ice (Schuum and Brakenridge 1987). All the preglacial valleys of this episode are identified in Figure 24 and are located east of the Missouri River. The Missouri River trench underwent intervals of partial filling with sediment during the Pleistocene, and subsequent downcutting and deposition of loess material in the Holocene. Coogan and Irving (1959) determined that to a great extent the loess deposits observed in the banks of the trench are Holocene in age. Radiocarbon dating and buried archeological remains confirm that these loess deposits are of Holocene age. In many locations, the alternating soil and sediment units of stratigraphic sequence/soil profiles reflect loess deposition of fine-grained sediments and indicate soil development in response to some climatic fluctuation. An interpretation by Flint (1955) of the products of the Pleistocene continental glacier included the deposition of thick outwash deposits within the trench. Following glacial events, outwash sediments were windblown and deposited as loess accumulations. The Missouri River downcut through the loess and outwash deposits, and soils developed during inter-glacial periods when relatively stable climatic conditions prevailed. These soils then became buried by prevailing eolian events. Loess deposition and soil development varied in amount and locality throughout these episodes.

The terrace sequences along the Missouri River are relics of the post-glacial downcutting intervals. In previous research, loess deposition has been identified in numerous cutbank faces of these terrace landforms. The designation by Toom and Artz (1985) defines five relatively flat terrace surfaces which are separated by dissected slopes. The "MT" identification is an abbreviation for "Missouri Terrace" (Coogan and

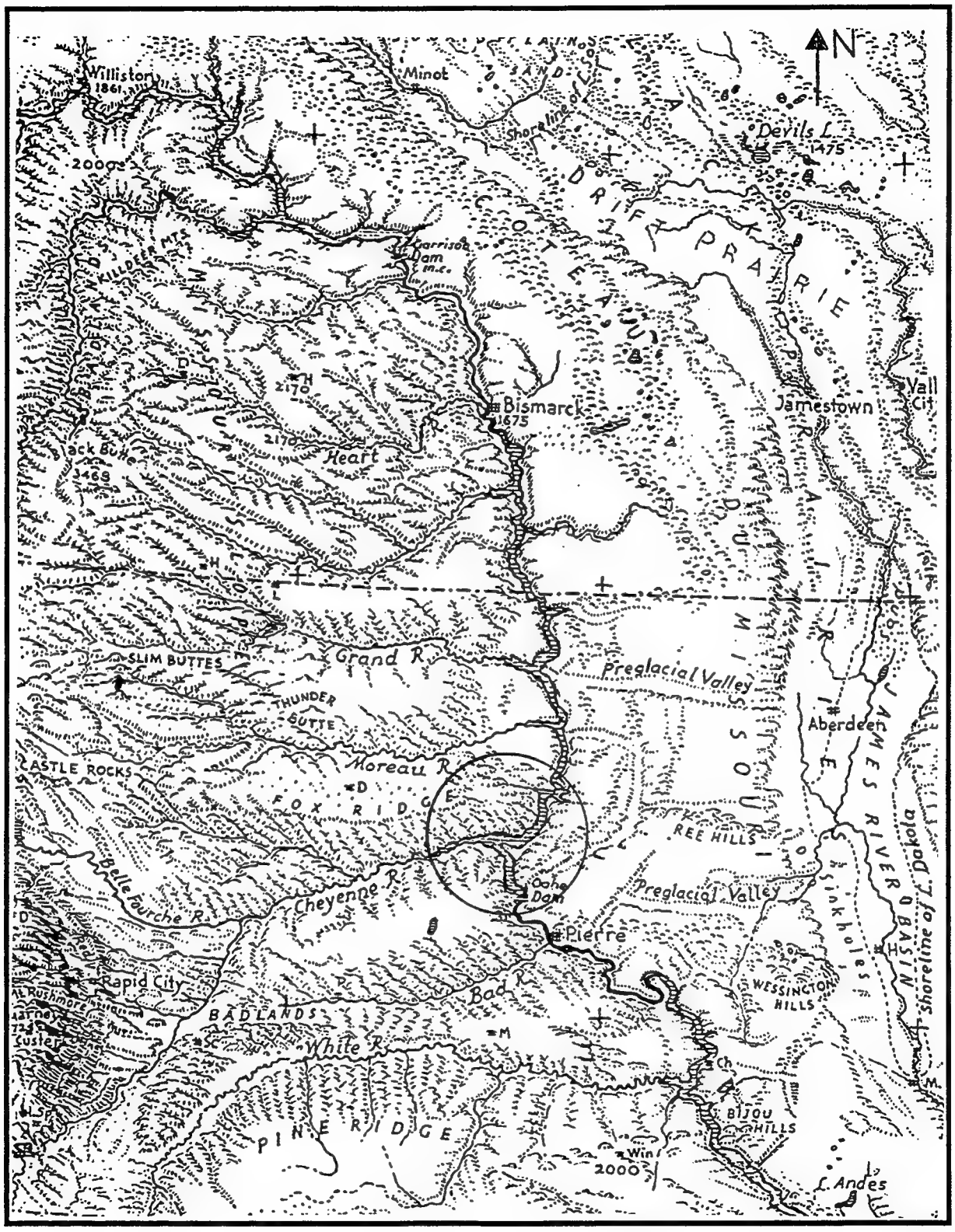


Figure 24. Regional physiographic map showing landforms of South Dakota in relation to the Oahe Reservoir. The map is from Landforms of the United States by Erwin Raisz (6th ed. 1957).

Irving 1959) and conforms in concept to "T1," "T2," etc., names used for the description of successively higher terrace surfaces. The lowest elevated terraces, MT0, MT1, and MT2 tend to be separated by short low escarpments. Terraces MT2, MT3, and MT4 are separated by ruggedly dissected breaks terrain. The modern floodplain, MT0, is believed to have formed during the Holocene, and fluvial erosional processes are currently reworking these sediments.

The soil maps published by the Soil Conservation Service (SCS) provide a source of information showing the surficial topography composed of varying soil types. In this study area, archeological material or buried soil units were identified in seven different soil types. These soils include the Dupree-Sansarc clays (DsE), Lowry silt loam (LwB), Sansarc-Shale land complex (ScF), Sansarc-Dupree clays (SaE), Sansarc-Opal clays (SbE), Agar silt loam (AgB), and Promise-Swanboy channeled lands (Pw). In areas where no archeological materials or buried soil units were observed, the soil series were predominantly Chantier clay (ChB), Chantier-Shale land complex (CsC), Opal clay (OaB), Opal-Sansarc clays (OsC), Promise clays (PrB), Sansarc-Opal clays (SbC), Schamber-Sansarc complex (SfF), Shale lands (Sh), and Swanboy clay (Sw). Since the archeological survey did not reveal any significant finds or identify buried soils in these locations, the geomorphic field study did not include these areas.

Erosional processes dominate the dissecting of the Pierre Shale. Exposures of the shale on steep, barren hillslopes and hilltops were evident while in the field. The physical weathering of the shale removes the clay matrix leaving a talus of lag deposits of ferromanganese concretions at the base of the slope. The bottoms of draws contained thick deposits of alluvium and colluvium which were derived from the eroded hilltops and slopes. In previous studies, documentation of animal bones was observed in cutbanks and in gullies which incised these deposits. These bones are believed to represent animals that died natural deaths or were killed by predators. At Location 6 of this study, for example, an animal bone in the cutbank of No Heart Creek was revealed. The meandering No Heart Creek has been reworking and downcutting a valley bottom of alluvium and colluvium that were once constituents of the Pierre Shale.

Locations Within the Study Area

The following locations were evaluated during the field reconnaissance survey: Locality 1, Site 5 (39DW174); Locality 2 (buried soil); Locality 3 (buried soil); Locality 4 (S3, T12, R31, buried soil); Locality 5 (39DW170, buried soil); and Locality 6 (S36, T11, R28, IFT4, buried bone). These localities are represented on respective USGS 1:24,000 scale topographic maps and SCS soil survey maps. The stratigraphic descriptions include the sediment and soil characteristics observed at each location on the basis of color, texture, and general information. All Munsell soil colors are described for the dry state. Soil texture and general descriptions are based on those defined by Birkeland (1984). Units described include both soil horizons and sedimentary strata and these are differentiated where possible. Units are numbered from the top down in all cases. In many localities, wind-deposited sand was recognized on the land surface and the upper unit of the soil profile. This recent deposition of sand is the product of particles being transported by winds from the beach and cutbank talus. Research (Handy 1976; Hetu 1992) has shown that particles larger than coarse sand (such as shale flakes) can be transported by wind mechanisms.

Locality 1

This site was located on the hillslope bank of a draw approximately 985 ft. (300 m) north of the present-day reservoir water levels, and at an elevation between 1620-1640 ft. (494-500 m) amsl (Figure 25). The soils mapped here by the Soil Conservation Service are Dupree-Sansarc clays (DsE). According to the SCS, this series consists of "well-drained, gently sloping to very steep (9-25%) clayey soils on uplands, and forming in clayey material from weathered shale" (Figure 26). Surface observation of the exposed

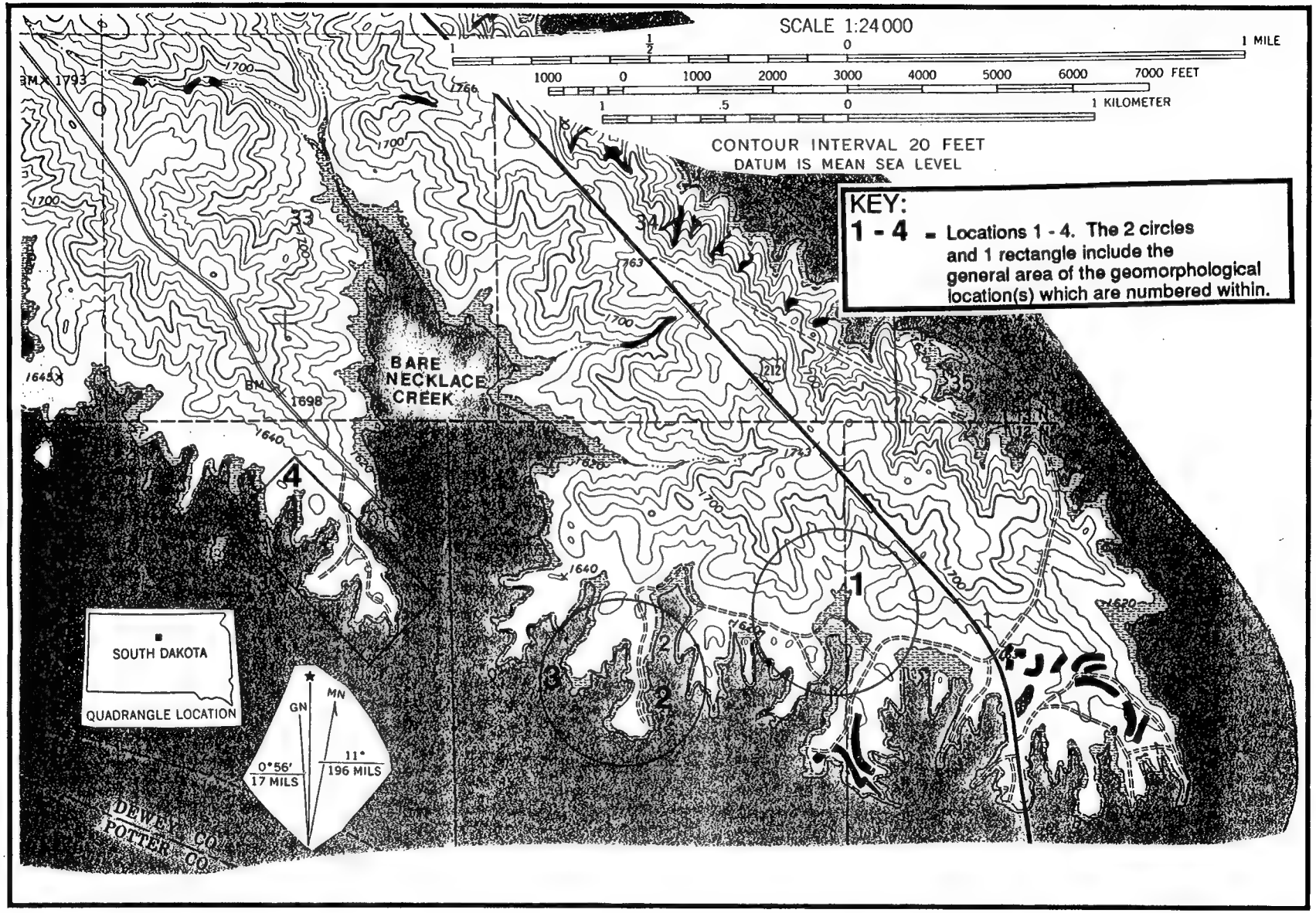


Figure 25. The USGS Patch Skin Buttes SE, South Dakota Quadrangle, a 1:24,000 topographic map including Locations 1-4.

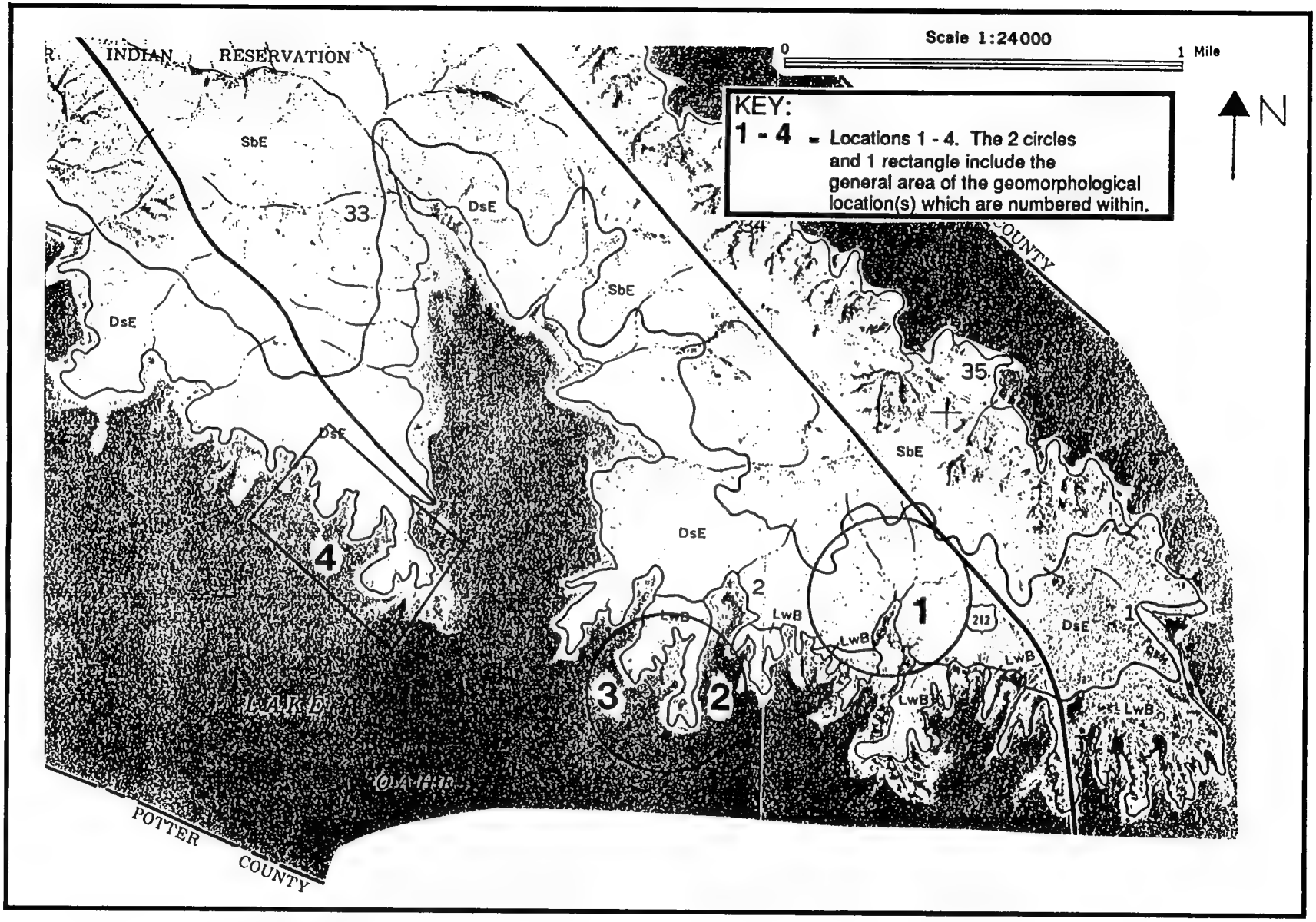


Figure 26. The SCS soil survey map of Dewey County, map No. 98, including Locations 1-4.

soil is described as being extremely dry due to differential drying. This surface unit was a grayish-brown (2.5Y 5/2) very fine clayey silt. Beneath this unit, a similar dark grayish-brown (2.5Y 4/2) clayey silt was revealed in a moist state. Since this location was recognized for the identification of exposed archeological materials on the surface, and a cutbank was not available, no further subsurface work was performed. This clayey silty soil is the result of erosional processes acting upon the weak Pierre Shale. The erosional processes of physical and chemical weathering combine to weaken the shale and dislocate fragments from the source rock. As particles are broken down from the source rock they can be transported by aeolian and surface runoff processes. Pierre Shale fragments were prominent on the surface and a small knob of this material was exposed at the hillslope bank. Two small drainage draws were at the base of the hillslope bank and joined the main stem of the draw which eventually fed into Lake Oahe.

In a previous report (Lueck et al. 1989), Brakenridge suggests that high-potential areas for aeolian buried sites may include Lowry silt loam (LwB). According to the SCS survey the Lowry soils are coarse - silty grained, mesic Mollisols with "wind-deposited parent material." This soil series was present between Location 1 and the reservoir (Figure 26), but apparently did not reveal any archeological materials or buried soil units of significance to merit geomorphological investigation. However, the Lowry silt loam soil designation to the southwest of Locality 1 revealed a buried soil and evidence of a cemetery. This area was designated Locality 2.

Locality 2

This site was located southwest of Locality 1, on the eastern side of a small peninsula-like landform approximately 100 ft. (30 m) north of the present-day reservoir water levels, and at an elevation of 1620 ft. (494 m) amsl (Figure 25). A cutbank face was exposed along the eastern and southern sides of the peninsula. The southernmost point of this peninsula landform was at one time the location of a cemetery. Below the base of the cutbank, on the reservoir beach, concrete bases of monuments were identified. Above the cutbank, on the surface of the peninsula, small depressions were identified as grave sites. Vegetation consisted of sage brush species and prairie grasses. The surface of the landform slopes from east to west which is probably the result of the deposition of wind blown sediments carried from the surface of the beach. The soils mapped here by the Soil Conservation Service are Lowry silt loam (LwB). As previously mentioned, the Lowry soils are coarse - silty grained, mesic Mollisols with "wind-deposited parent material." According to the SCS, this series consists of "well-drained, gently sloping (2-6%) silty soils on terraces" (Figure 26). Two soil profiles were mapped along the face of a cutbank.

Profile 1

Profile 1 was mapped on the northern end of the peninsula where a 165 cm cutbank was exposed (Figure 27; Plate 11). Unit 1 is a 16 cm thick layer of light gray (2.5Y 7/2) matted organic material and medium-fine sand of aeolian origin. The organic material is near the surface, and apparently is prairie grass which has recently been entombed by wind-deposited fine sand. Unit 2 is a 25 cm thick layer of light brownish-gray (10YR 6/2) fine sand and a low percentage of silt. It showed a slightly sticky and plastic consistency; weak, angular blocky structure; and weak cementation. The lower 10 cm show a 10% by volume accumulation of calcium carbonates which are prominent in the next unit. The lower boundary of Unit 2 is smooth and gradual. Unit 3 is a buried soil and consists of a 40 cm thick layer of very dark grayish-brown (10YR 3/2), very fine clayey silt. It showed a sticky and plastic consistency; moderate, prismatic structure; and weak cementation. The unit shows a 30% by volume accumulation of calcium carbonates. The lower boundary of Unit 3 is smooth and clear. Unit 4 is a 60 cm thick layer of light yellowish-brown (2.5Y 6/4) clayey silt. It showed a sticky and plastic consistency; weak, subangular blocky structure; and weak-strong cementation. The upper 15 cm show a 20% by volume

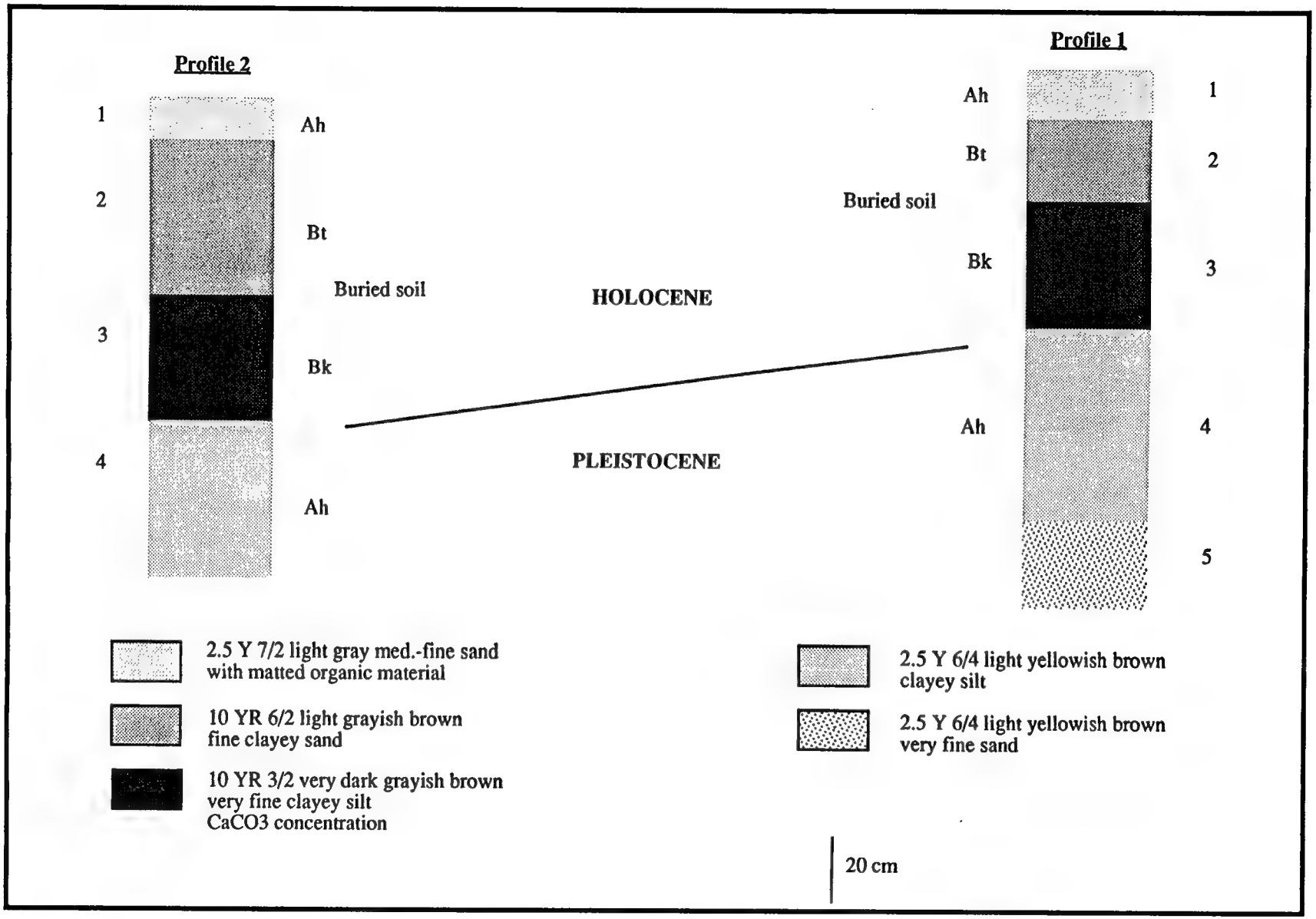


Figure 27. Location 2, Profiles 1 and 2.

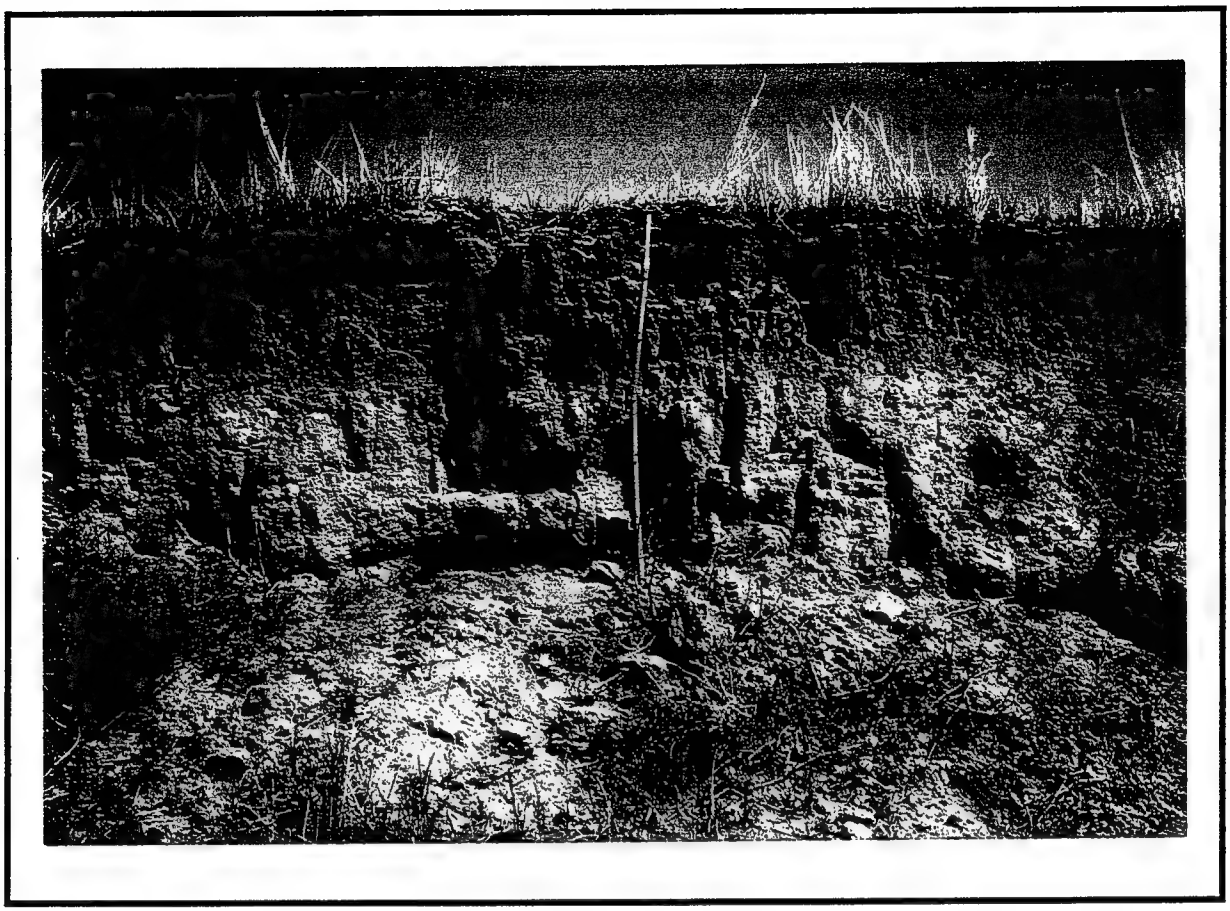


Plate 11. Profile 1 of cutbank at Location 2.

accumulation of calcium carbonates. The lower boundary of Unit 4 is smooth and gradual. Unit 5 was located at the base of the cutbank and covered by talus and slump material. Excavation of this material revealed a 25+ cm thick layer of light yellowish-brown (2.5Y 6/4) very fine sand. It showed a slightly sticky and slightly plastic consistency; weak, fine granular structure; and weak cementation.

This soil profile is interpreted as Holocene age loess deposits with Ah/Bt/Bk horizons (mollisol), overlying a Pleistocene age loess deposit, an Ah horizon (inceptisol).

Profile 2

Profile 2 was mapped on the southern end of the peninsula where a 150 cm cutbank was exposed (Figure 27; Plate 12). Unit 1 is a 10 cm thick layer of light gray (2.5Y 7/2) matted organic material and medium-fine sand of aeolian origin. The organic material is near the surface and apparently is prairie grass which has recently been entombed by wind-deposited fine sand. Unit 2 is a 50 cm thick layer of light brownish-gray (10YR 6/2) fine sand and a low percentage of silt. It showed a slightly sticky and plastic consistency; weak, angular blocky structure; and weak cementation. The lower 30 cm show a 10% by volume accumulation of calcium carbonates which are prominent in the next unit. The lower boundary of Unit 2 is smooth and gradual. Unit 3 is a buried soil and consists of a 40 cm thick layer of very dark grayish-brown (10YR 3/2), very fine clayey silt. It showed a sticky and plastic consistency; moderate, prismatic structure; and weak cementation. The unit shows a 30% by volume accumulation of calcium carbonates. The lower boundary of Unit 3 is smooth and clear. Unit 4 is a 50 cm thick layer of light yellowish-brown (2.5Y 6/4) clayey silt. It showed a sticky and plastic consistency; weak, sub-angular blocky structure; and weak-strong cementation. The upper 10 cm show a 20% by volume accumulation of calcium carbonates. The lower boundary of Unit 4 was below the base of the cutbank and covered by talus and slump material. A unit similar to Unit 5 of Profile 1 is expected to underlie this Unit 4.

This soil profile is also interpreted as consisting of Holocene age loess deposits with Ah/Bt/Bk horizons (mollisol), overlying a Pleistocene age loess deposit, an Ah horizon (inceptisol).

Locality 3

This site was located west of Locality 2, on the western side of a small peninsula-like landform approximately 100 ft. (30 m) north of the present-day reservoir water levels, and at an elevation of 1620 ft. (494 m) amsl (Figure 25). Low cutbank faces were exposed along the sides of the peninsula. Vegetation consisted of sagebrush species and prairie grasses. The surface of the landform slopes from east to west which is probably the result of the deposition of wind-blown sediments carried from the surface of the beach. The soils mapped here by the Soil Conservation Service are Lowry silt loam (LwB). As previously mentioned, the Lowry soils are coarse-silty grained, mesic Mollisols with "wind-deposited parent material." According to the SCS, this series consists of "well-drained, gently sloping (2-6%) silty soils on terraces" (Figure 26). One soil profile was mapped along the western face of the cutbank.

Profile 1

Profile 1 was mapped on the western side of the peninsula where a 107 cm cutbank was exposed (Figure 28; Plate 13). Unit 1 is a 7 cm thick layer of light yellowish-brown (2.5Y 6/4) matted organic material and medium-fine sand of aeolian origin. The organic material is near the surface, apparently prairie grass which has recently been entombed by wind-deposited fine sand. Unit 2 is a 50 cm thick layer of light yellowish-brown (2.5Y 6/4) sandy silt with some pebbles and stones. It showed a slightly sticky and plastic consistency; weak, angular blocky structure; and weak cementation. Fire-cracked rock and

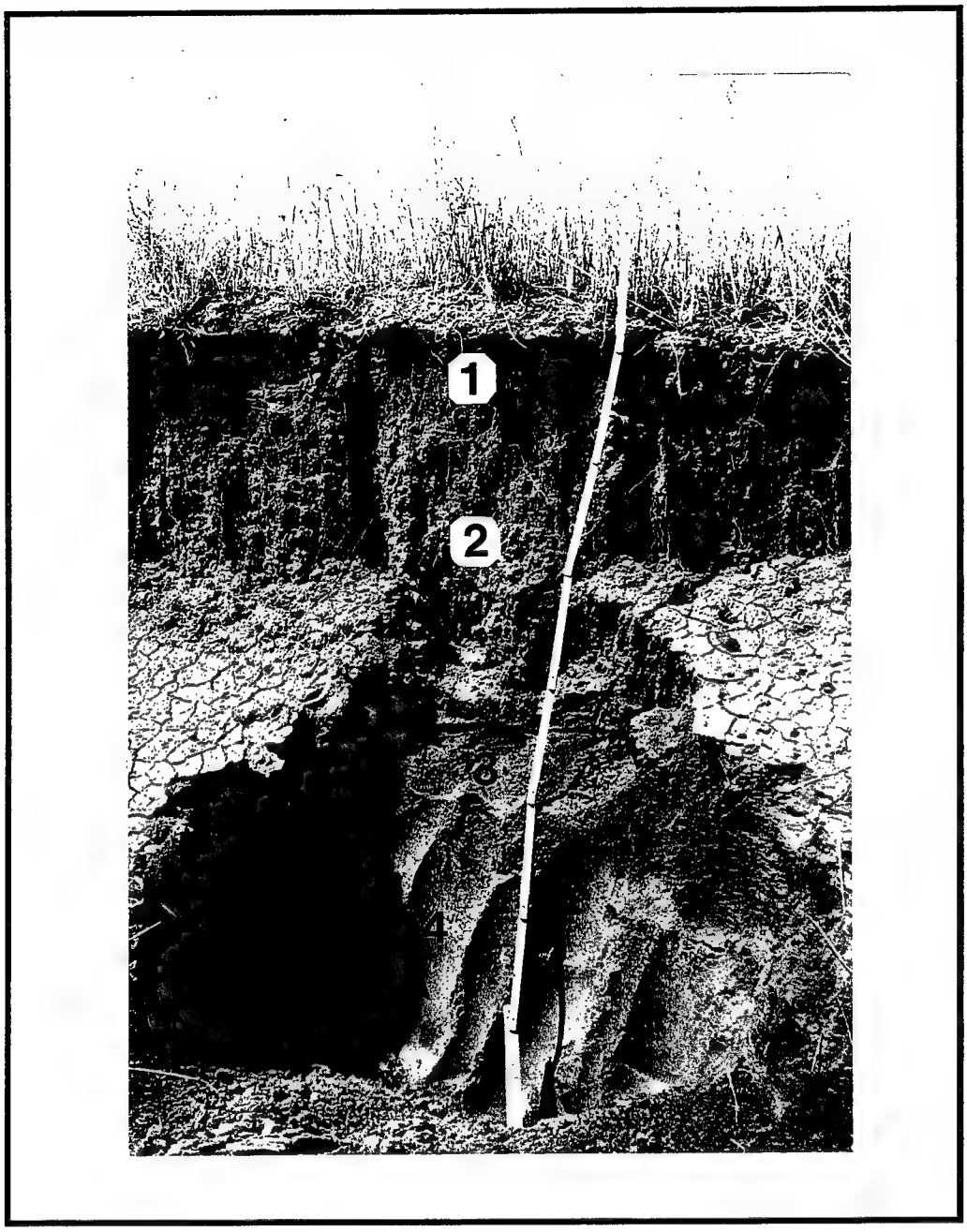
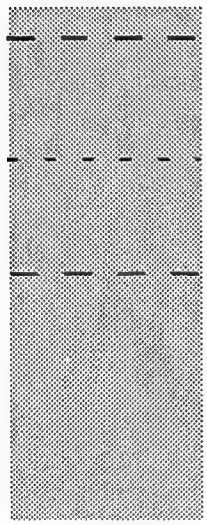


Plate 12. Profile 2 of cutbank at Location 2.

LOCATION 3 PROFILE 1



1	Ah	2.5 Y 6/4 light yellowish brown med.- fine sand with matted organic material (aeolian origin)
2	Bt	2.5 Y 6/4 light yellowish brown sandy silt with pebbles,stones, and calcium carbonate accumulation (Buried soil). Fire-cracked rock and bone flakes were scattered in this unit.
3	Bk	2.5 Y 6/4 light yellowish brown sandy silt with pebbles.

20 cm

Figure 28. Location 3, Profile 1, deposition of Holocene age.

Plate 13. Profile 1 of cutbank at Location 3. Note buried soil horizon and pebbles in lower unit.

bone flakes were scattered in this unit. The lower 25-30 cm showed a 10% by volume accumulation of calcium carbonates. The lower boundary of Unit 2 is smooth and gradual. Unit 3 is a 50+ cm thick layer of light yellowish-brown (2.5Y 6/4) sandy silt with pebbles. It showed a slightly sticky and plastic consistency; weak, angular blocky structure; and weak cementation.

This soil profile is interpreted as Ah/Bt/Bk horizons (mollisol) composed of loess deposits of Holocene age. The upper half of Unit 2 is interpreted as a buried soil. This buried soil was composed of finer-grained sediments and lacked the pebble-stone content, and the carbonate accumulation.

Locality 4

This site included four areas of similar stratigraphy and soil development; thus, only one profile was mapped to represent the location. This grouping of sites was located to the west of the mouth of Bare Necklace Creek at an elevation between 1620-1640 ft. (494-500 m) amsl (Figure 25). The soils mapped here by the Soil Conservation Service are Dupree-Sansarc clays (DsE). According to the SCS, this series consists of "well-drained, gently sloping to very steep (9-25%) clayey soils on uplands, and forming in clayey material from weathered shale" (Figure 26). The cutbank face that was mapped appeared "sand-blasted" as a result of the wind blowing off the reservoir.

Profile 1

Profile 1 was mapped on the southern perimeter of the peninsula where a 165 cm cutbank was exposed (Figure 29; Plates 14 and 15). This location is potentially an island, but due to low water levels, it was connected to the shoreline. Unit 1 is a 5 cm thick layer of light gray (2.5Y 7/2) matted organic material and medium-fine sand of aeolian origin. The organic material is near the surface, apparently prairie grass which has recently been entombed by the wind-deposited fine sand. Unit 2 is a 47 cm thick layer of light brownish-gray (2.5Y 6/2) medium-fine sand. The lower 15 cm of this unit is a buried soil and consists of a very dark gray (2.5Y 3/0) medium-fine sand. Unit 2 showed a slightly sticky and plastic consistency; weak, angular blocky structure; and weak cementation. The middle 15 cm show a 10% by volume accumulation of calcium carbonates. The lower boundary of Unit 2 is smooth and gradual. Unit 3 is an 80 cm thick layer of light olive brown (2.5Y 5/4) medium-fine sand of aeolian origin. It showed a slightly sticky and plastic consistency; weak, angular blocky structure; weak cementation; and a 10% by volume accumulation of calcium carbonates. Small pebbles were scattered throughout the unit. The lower boundary of Unit 3 is smooth and clear. Unit 4 is a 10 cm thick layer of yellowish-brown (10YR 5/4) coarse sand and shale fragments with Fe oxidation. It showed a non-sticky and nonplastic consistency; granular structure; and weak cementation. The lower boundary of Unit 4 is smooth and gradual. Unit 5 was located at the base of the cutbank and covered by talus and slump material. Excavation of this material revealed a 25+ cm thick layer of yellowish-brown (10YR 5/4) coarse sand with Fe oxidation and an increase in number of shale fragments. It showed a non-sticky and nonplastic consistency; granular structure; and weak cementation.

This soil profile is interpreted as Holocene age loess deposits consisting of Ah/Bt/Bk horizons (mollisol) with a buried soil horizon, and overlying a Pleistocene age Ah/Bt horizon (inceptisol) loess deposit and Missouri River channel deposits.

Locality 5

This site included four areas of similar stratigraphy and soil development; thus, only one profile was mapped to represent the locations. Locality 5b was a rotational slide to the east of Profile 1 at Locality 5, and is also discussed in this section. This grouping of sites was located at a bend in the Missouri River at elevations between 1620-1640 ft. (494-500 m) amsl (Figure 30). The soils mapped here by the Soil Conservation Service are Agar

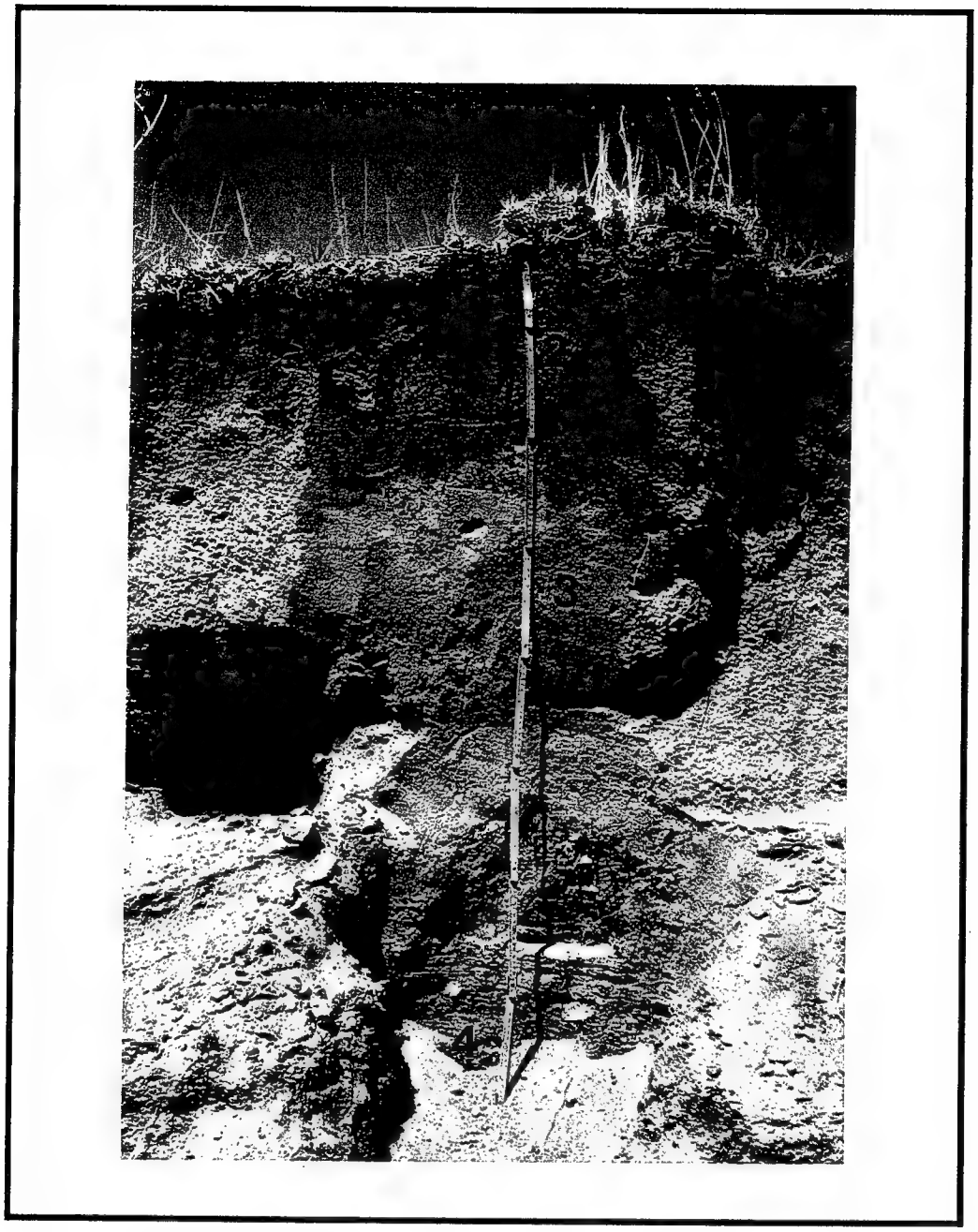


Plate 14. Soil profile of cutbank at Location 4.

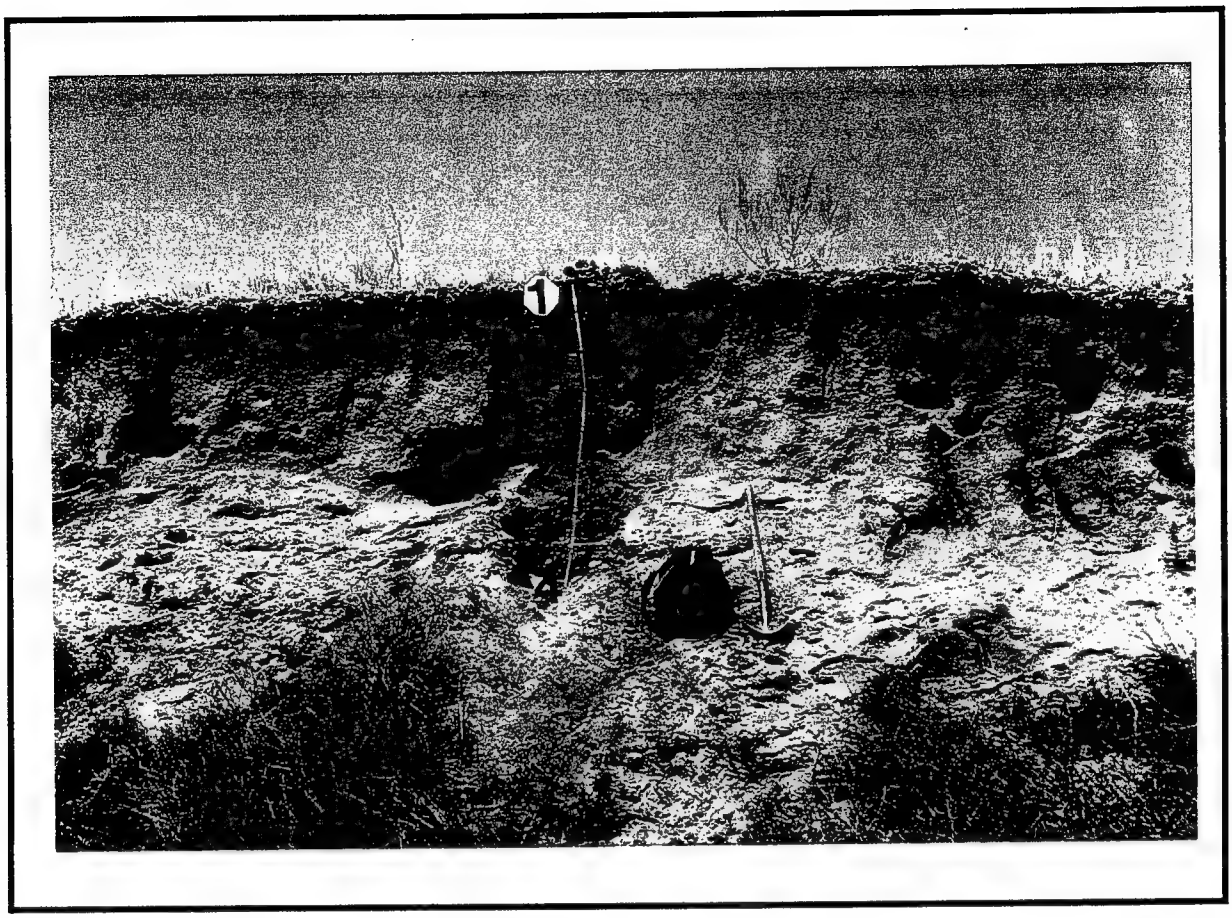


Plate 15. Soil profile of cutbank at Location 4.

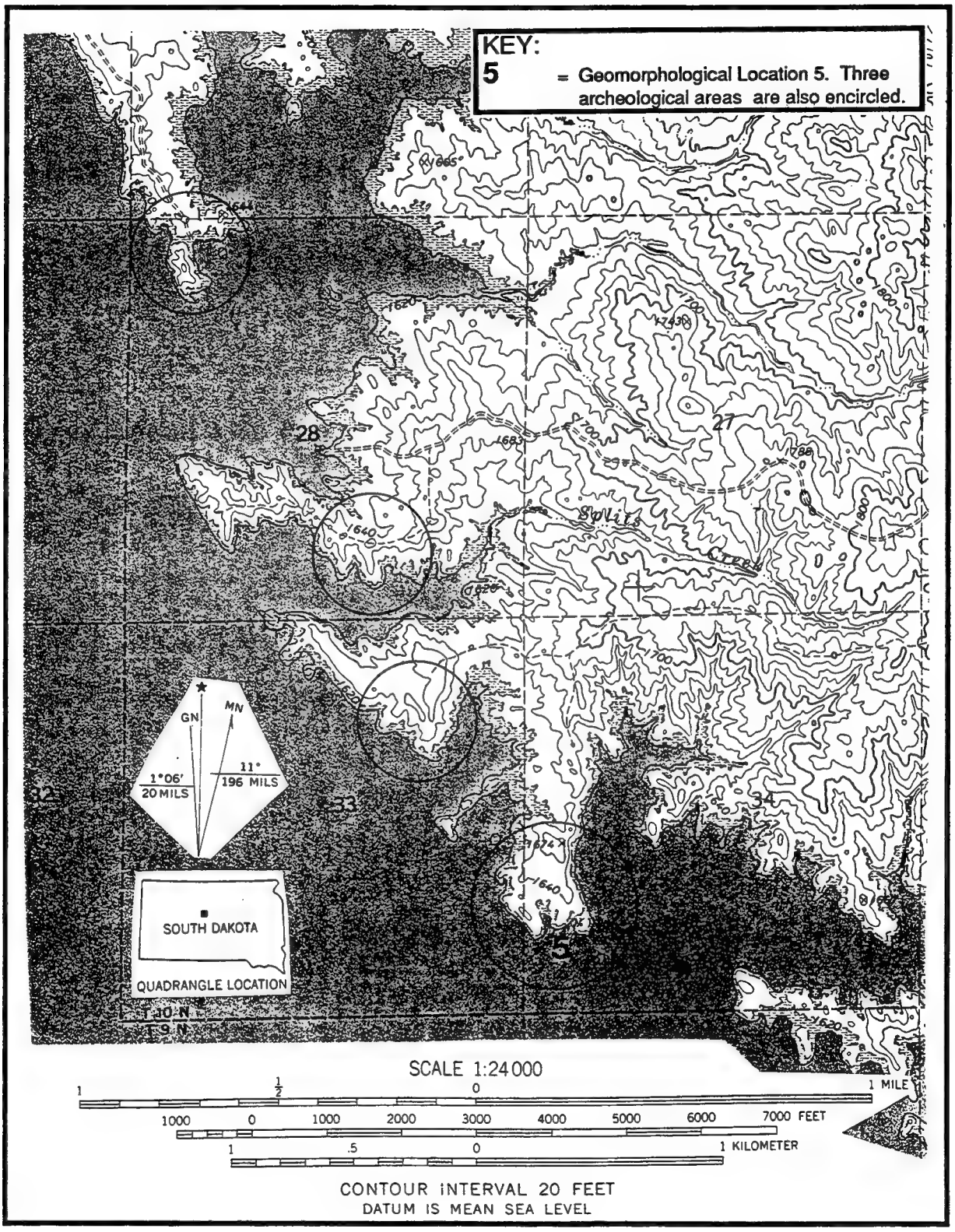


Figure 30. The USGS No Heart Creek SE, South Dakota Quadrangle, a 1:24,000 topographic map including Location 5 and other archeological areas.

silt loam (AgB), Sansarc-Opal clays (SbE), and Sansarc-Shale land complex (ScF). According to the SCS, the Agar silt loam consists of "well-drained, gently sloping (2-6%) silty soils on uplands, and forming in silty loess;" the Sansarc-Opal clays consist of "well-drained, plane to convex slopes (15-25%), and forming in material weathered from the underlying shale;" and the Sansarc-Shale land complex consists of "well-drained, steep and convex slopes (15-45%), with outcrops of shale intermingled with the Sansarc soils" (Figure 31).

Profile 1

Profile 1 was mapped on the southern end of the peninsula where a 190 cm cutbank was exposed (Figure 32; Plates 16, 17 and 18). Unit 1 is a 10 cm thick layer of light gray (2.5Y 7/2) matted organic material and medium-fine sand of aeolian origin. The organic material is near the surface, apparently prairie grass which has recently been entombed by the wind-deposited fine sand. Unit 2 is a 50 cm thick layer of light brownish-gray (2.5Y 6/2) medium-fine sand. The lower 15 cm of this unit is a buried soil and consists of a very dark gray (2.5Y 3/0) medium-fine sand. Unit 2 showed a slightly sticky and plastic consistency; weak, angular blocky structure; and weak cementation. The middle 15 cm show a 10% by volume accumulation of calcium carbonates. The lower boundary of Unit 2 is smooth and gradual. Unit 3 is a 45 cm thick layer of light olive brown (2.5Y 5/4) medium-fine sand of aeolian origin. It showed a slightly sticky and plastic consistency; weak, angular blocky structure; weak cementation; and a 10% by volume accumulation of calcium carbonates. Small pebbles were scattered throughout the unit. The lower boundary of Unit 3 is smooth and clear. Unit 4 is also a buried soil and consists of a 40 cm thick layer of light brownish-gray (2.5Y 6/2) medium-fine sand. It showed a slightly sticky and plastic consistency; weak, angular blocky structure; and weak cementation. A 10% by volume accumulation of calcium carbonates was evident. The lower boundary of Unit 4 is smooth and gradual. Unit 5 is a 25 cm thick layer of light olive brown (2.5Y 5/4) medium-fine sand of aeolian origin. It showed a slightly sticky and plastic consistency; weak, angular blocky structure; weak cementation; and a 10% by volume accumulation of calcium carbonates. Small pebbles were scattered throughout the unit. The lower boundary of Unit 5 is smooth and gradual. Unit 6 is a 20+ cm thick layer of yellowish-brown (10YR 5/4) coarse sand and gravel. It showed a non-sticky and nonplastic consistency; granular structure; and weak cementation. This unit was underlain by a coarse fluvial-deposited gravel.

This soil profile is interpreted as Holocene age loess deposited Ah/Bt/Bk horizons (mollisol) with a buried soil horizon, and overlying Pleistocene age loess deposited Ah/Bt/Ah paleosol and Missouri River channel deposits.

Location 5b was to the east of the mapped profile, on the crest of an east-facing cutbank. The bank is presently part of a large rotational slide resulting in a slumping of the land surface. A 1.5 meter step from the natural land surface down to the slump surface is evident (Plate 19). In the slump landform, an effort to identify a buried soil unit was attempted, but due to late afternoon shadows, accurate evaluation and mapping was hindered. This buried soil should tie into the natural stable landform and the buried unit in the described profile of Location 5.

Locality 6

This site was located north of the present-day reservoir water levels, and at an elevation of 1620-1630 ft. (494-497 m) amsl (Figure 33). No Heart Creek meanders through a wide and level floodplain, reworking colluvium from the hillslopes and alluvium from upstream. Cutbank faces were exposed along No Heart Creek. During this investigation the creek bed was dry. Vegetation consisted of sage brush species, willow and cottonwood trees, rosehip shrubs, and prairie grasses. The soils mapped here by the Soil Conservation Service are Promise-Swanboy clays (Pw). This series consists of "well-drained, nearly level to gently sloping clayey soils on uplands and terraces" (Figure 34). The Promise soil

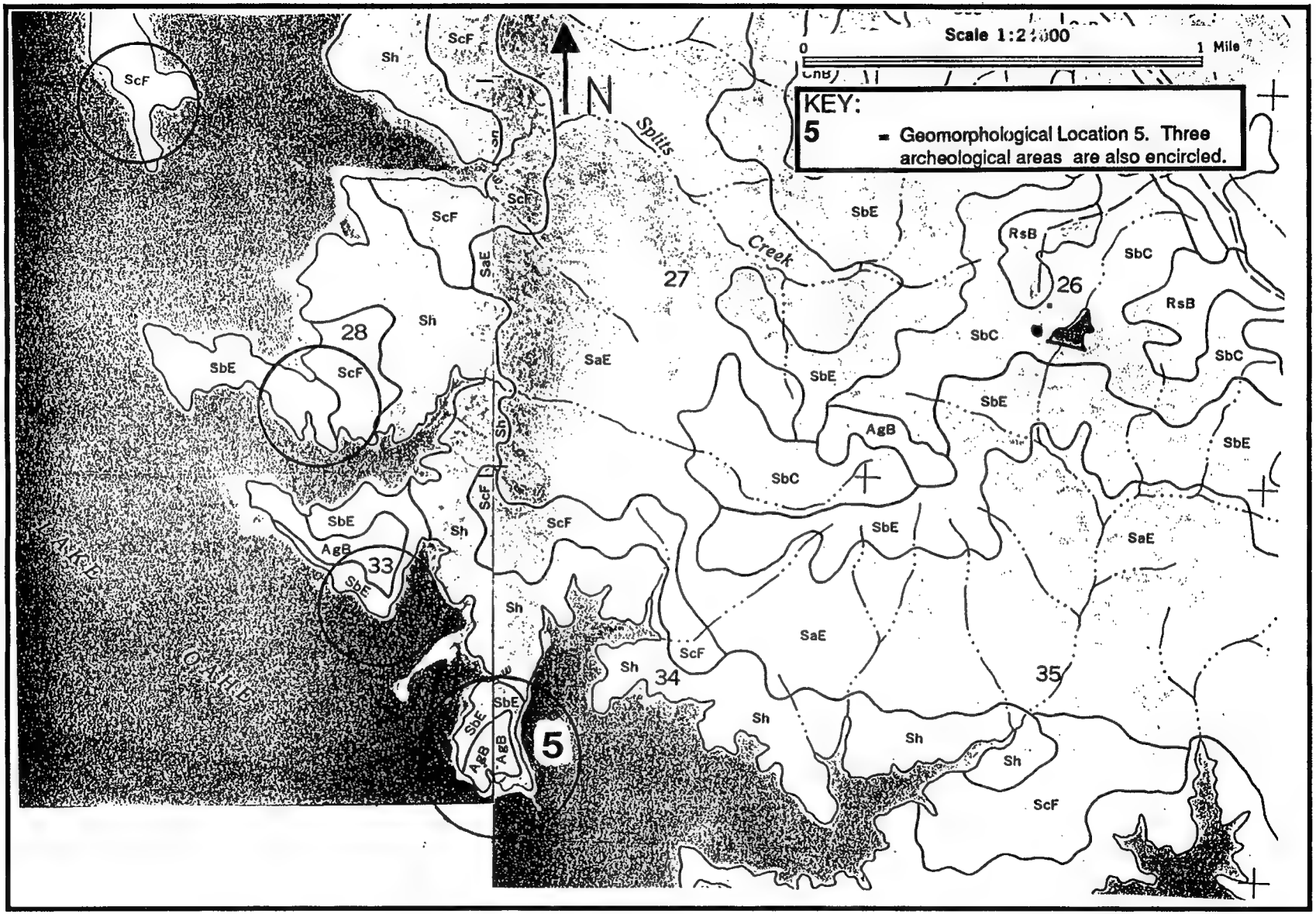


Figure 31. The SCS soil survey map of Dewey County, No. 131, including Location 5.

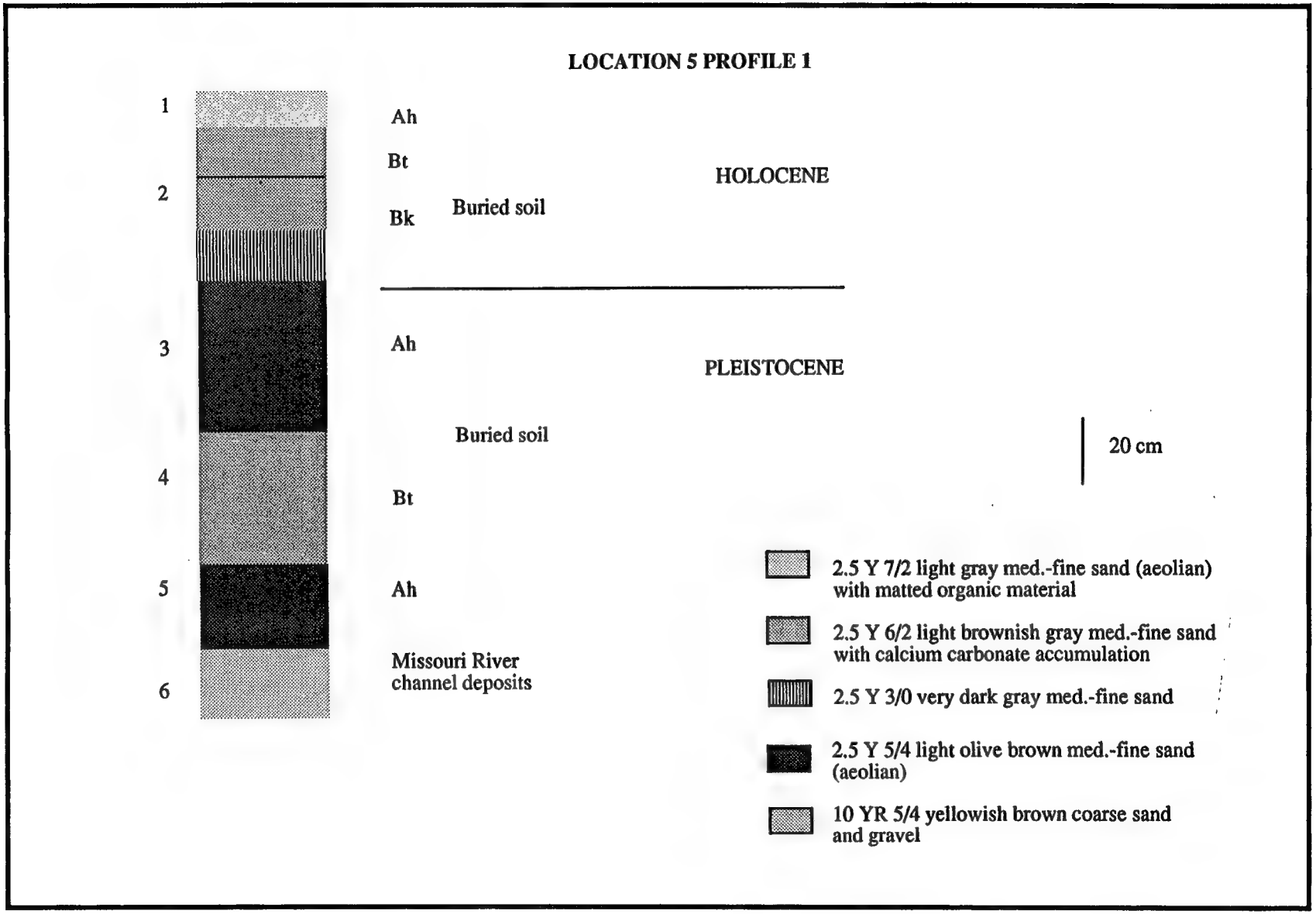


Figure 32. Location 5, Profile 1.

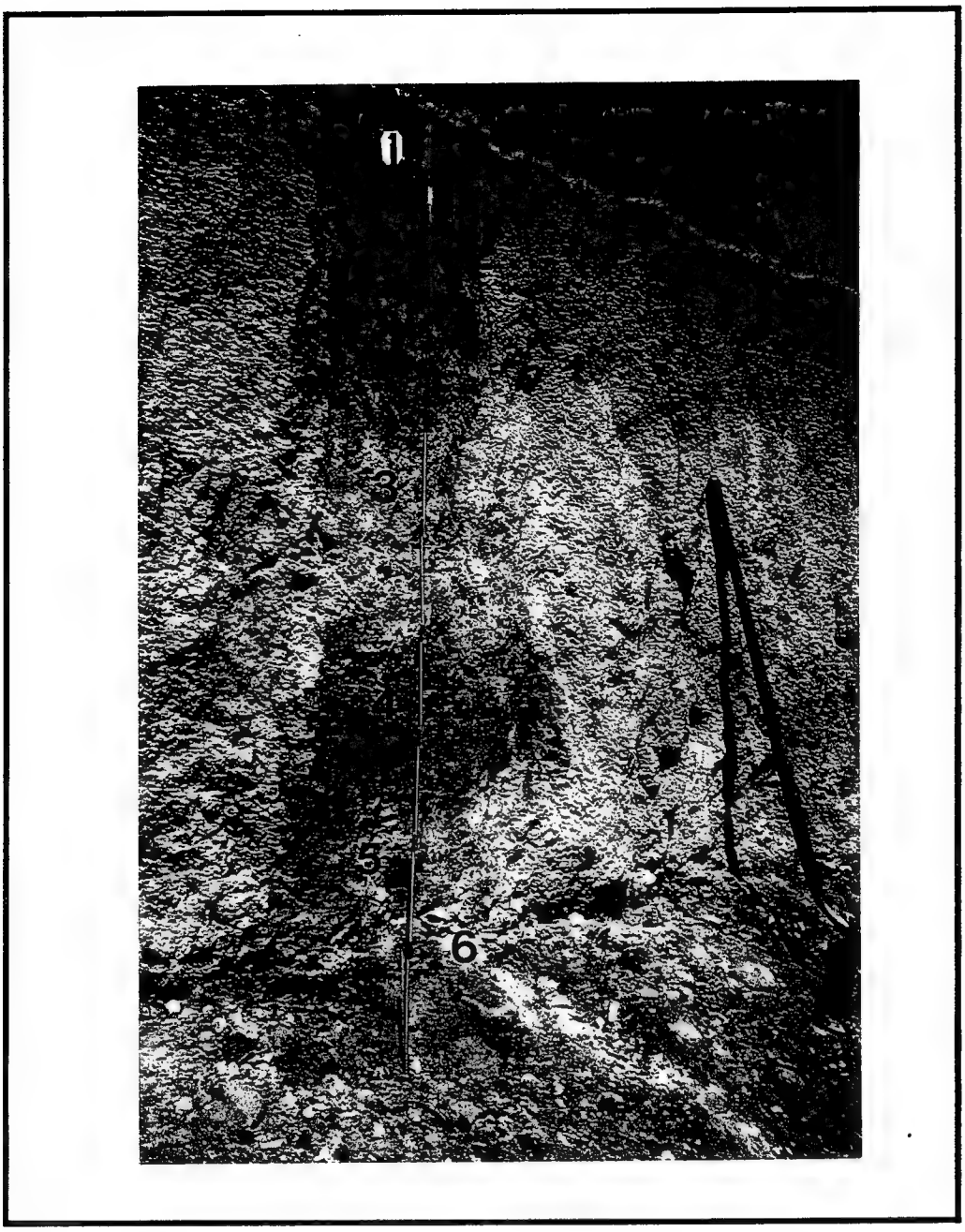


Plate 16. Soil profile of cutbank at Location 5. Note buried soil horizons and coarse gravel at base.

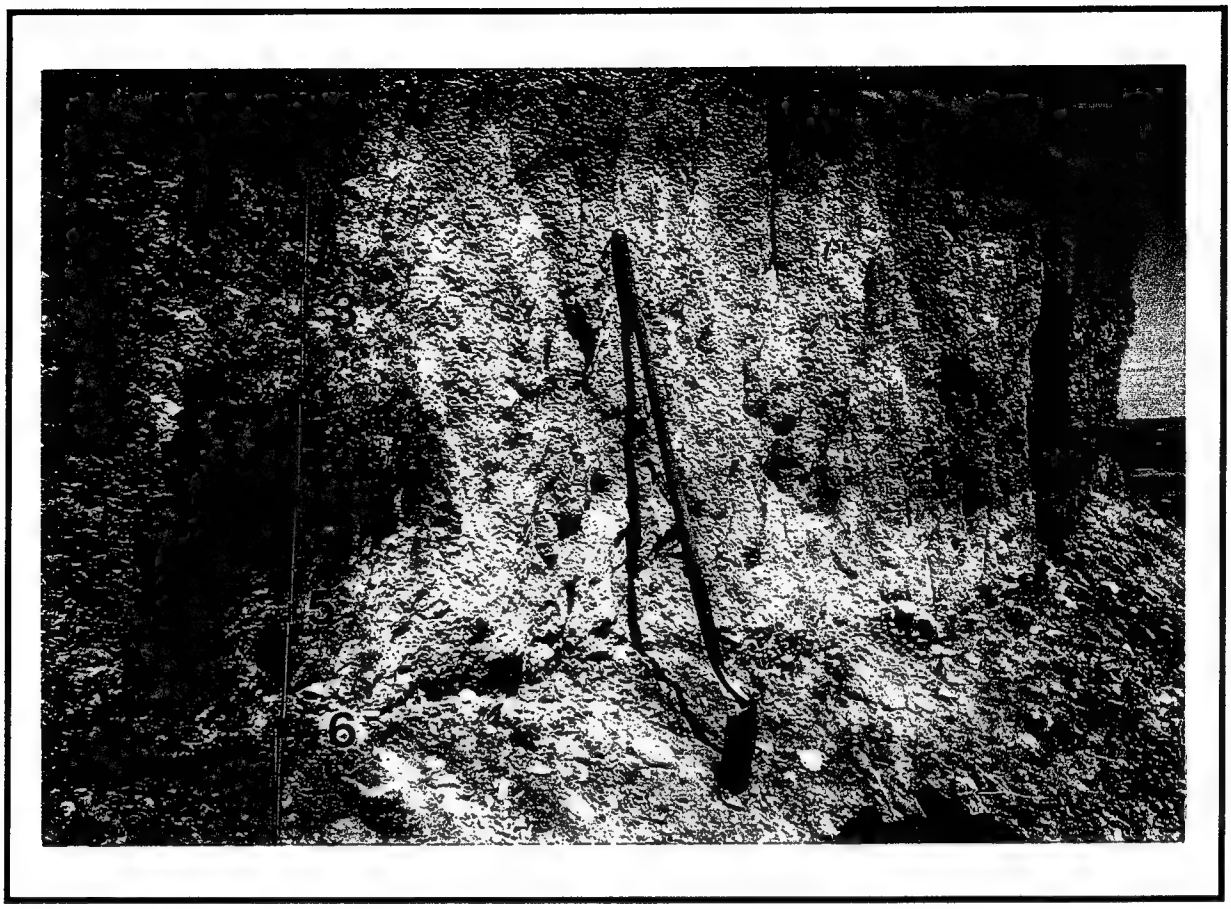


Plate 17. Soil profile of cutbank at Location 5. Note buried soil horizons and coarse gravel at base.

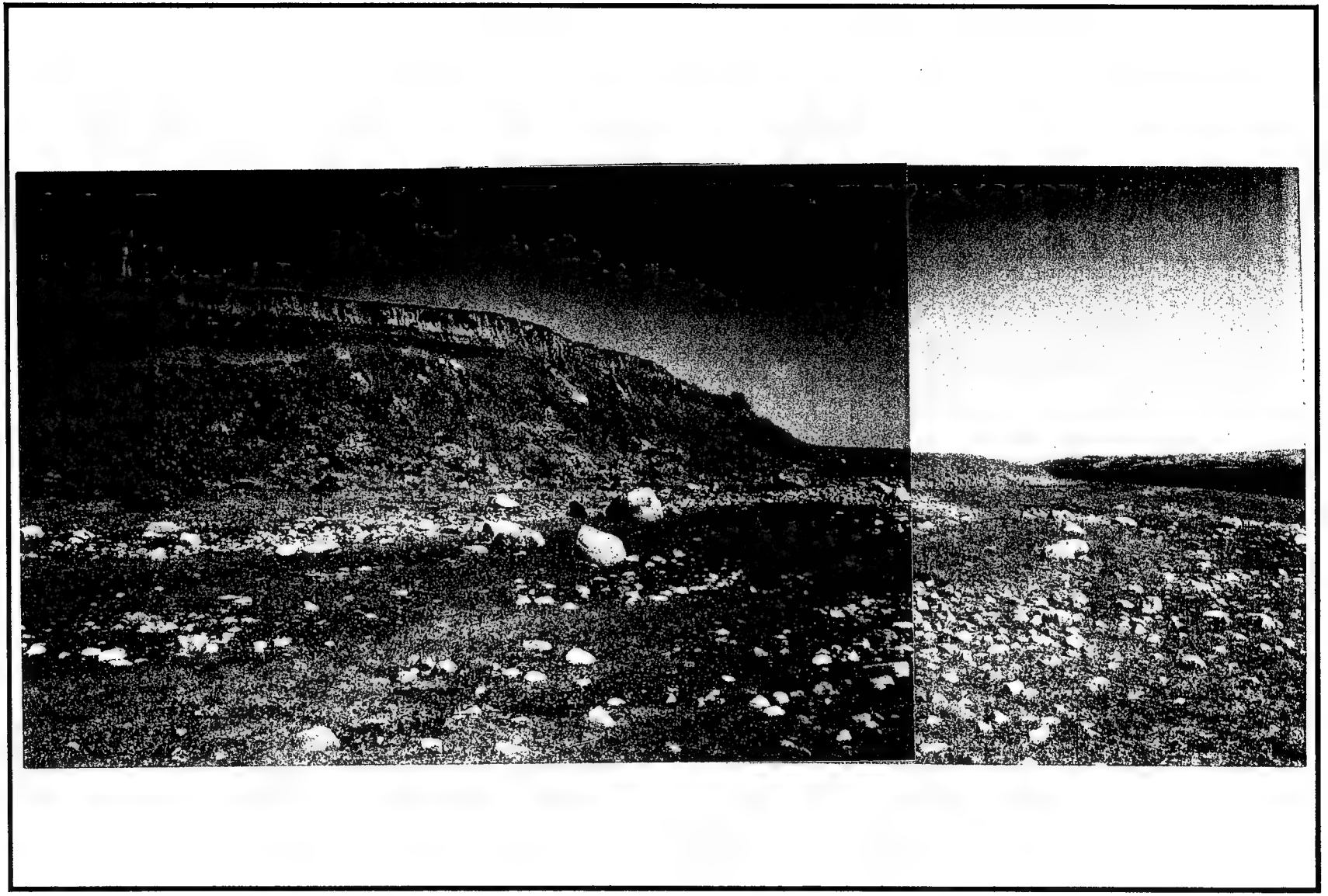


Plate 18. View of cutbank at Location 5. Note glacial boulders on beach and coarse gravel underlying loess cap.

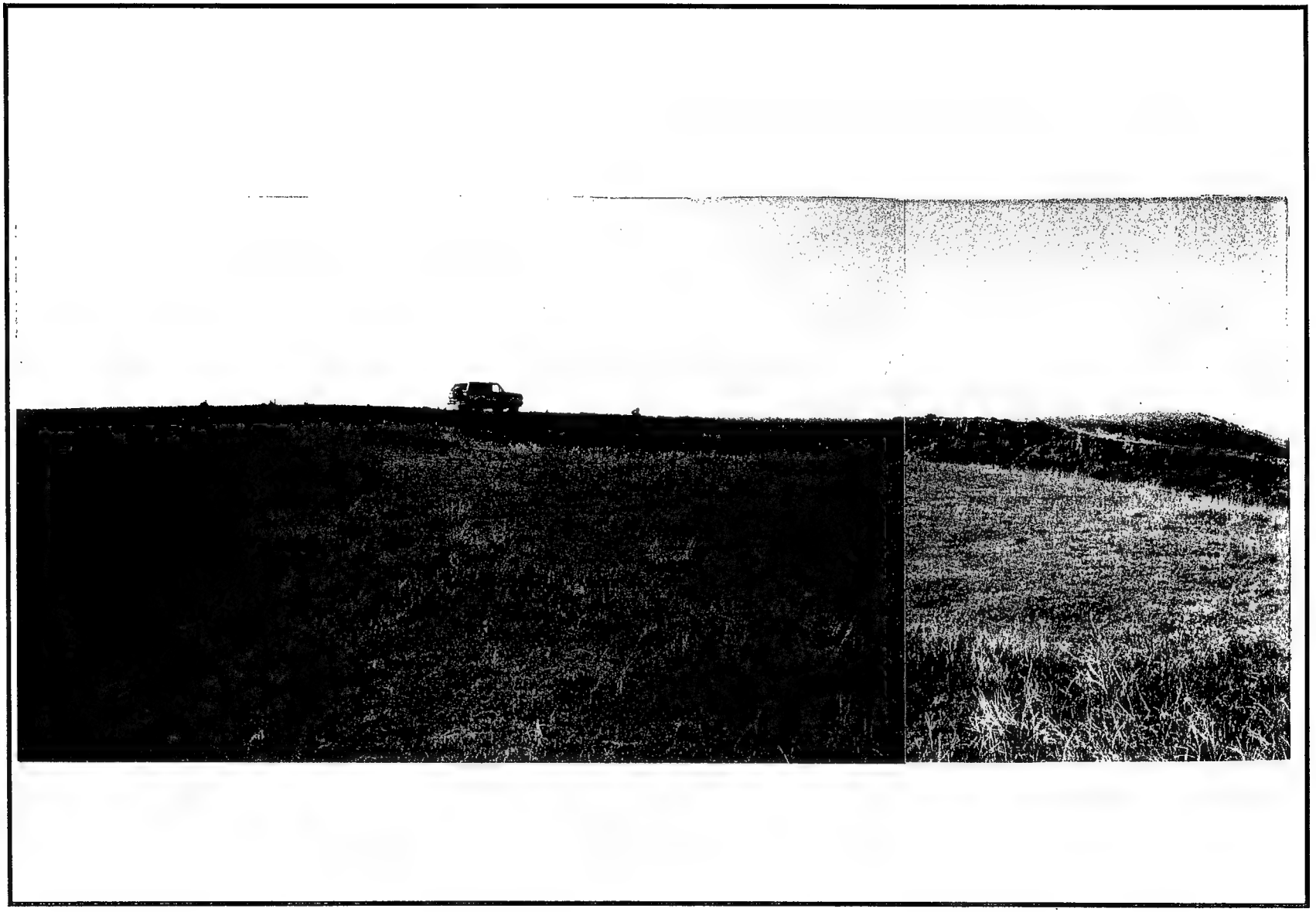


Plate 19. The rotational slide landform at Location 5b.

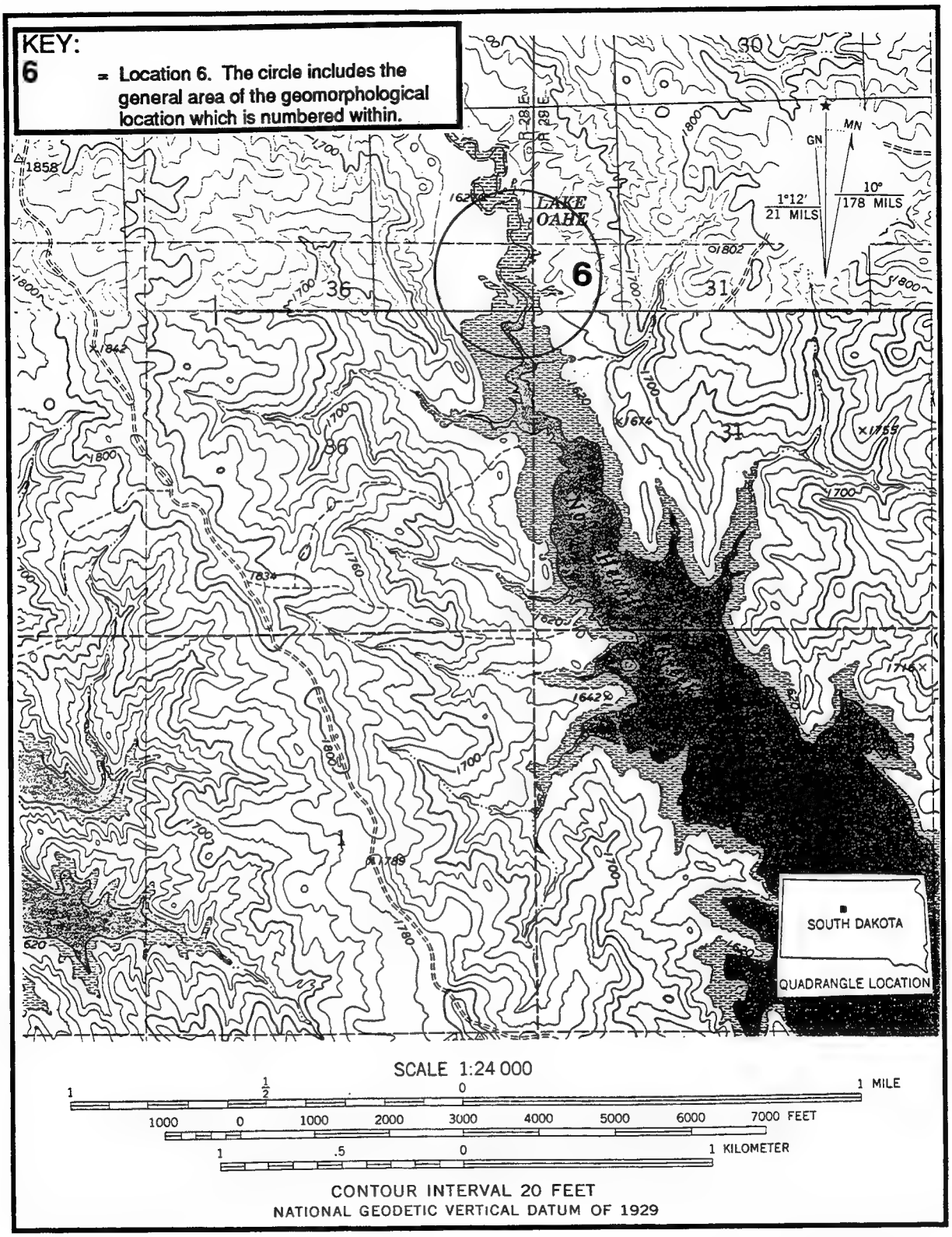


Figure 33. The combined USGS No Heart Creek SW, and No Heart Creek, South Dakota Quadrangles, including Location 6.

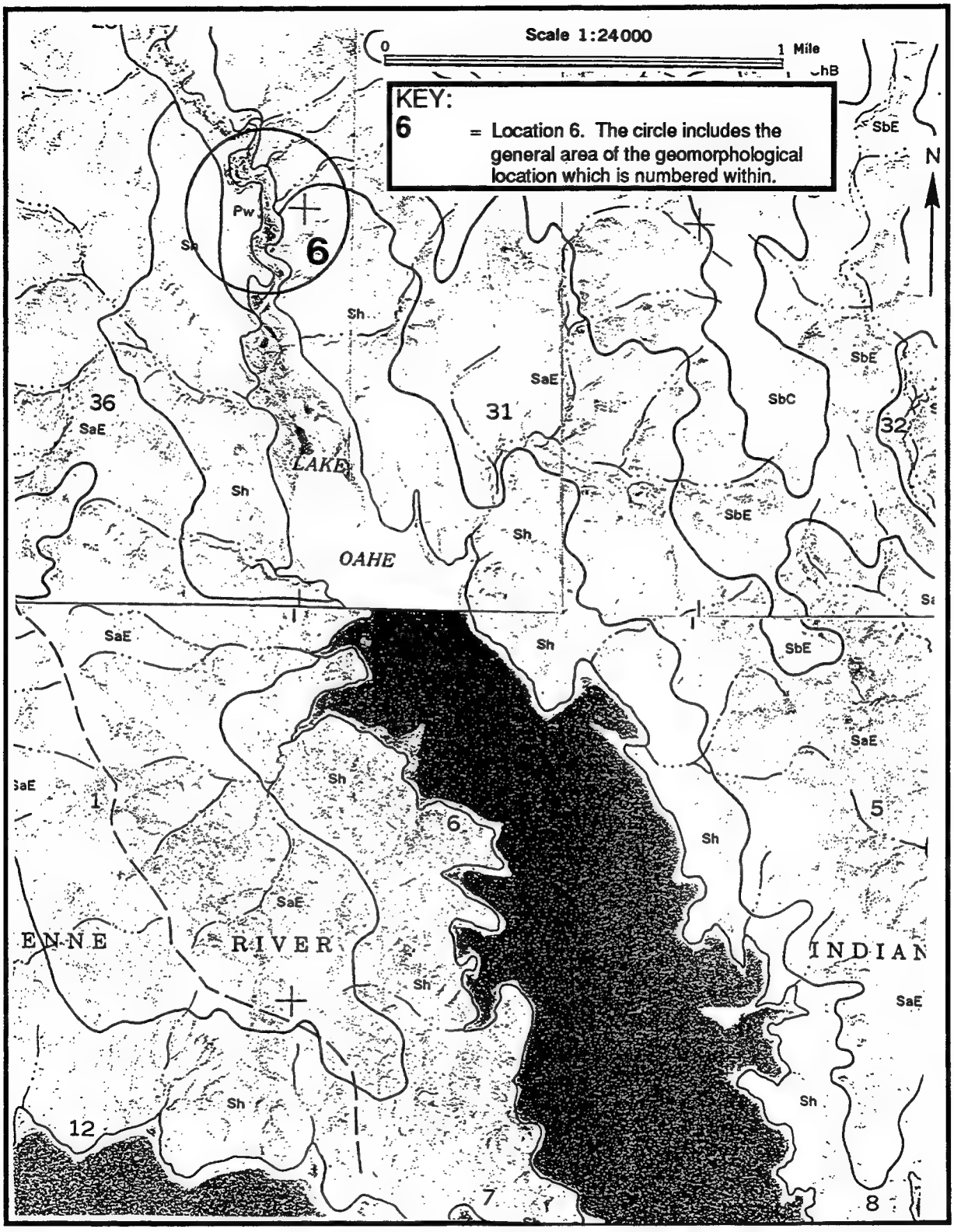


Figure 34. The SCS soil survey maps of Dewey County, Nos. 118 and 125, including Location 6.

is formed from colluvium washed in from adjacent soils, and is a mesic Mollisol. The Swanboy soil is formed in alluvium, and is a mesic Aridisol. Two soil profiles were mapped along adjacent faces of the creek bank.

Profile 1 was mapped on the outside of a meander bend where a 6.5 meter high cutbank was exposed (Figure 35; Plate 20). The creek and cutbank face were separated from the base of a hillslope by approximately 37 meters of nearly level land surface. This surface sloped toward drainage draws which were fed by the surrounding dissected hillslope. These adjacent drainage draws separated the continuity of the creek bank resulting in cutbank sections. A buried animal bone was identified at a depth of 2.25 m below the surface in this cutbank profile. Profile 2 (Plate 21) was mapped on a reach of the creek between meanders where a 5.3 m high cutbank was exposed. This cutbank profile was located approximately 25 meters to the north of Profile 1 and at a greater distance from the base of a hillslope and adjacent drainage draws.

Profile 1

Unit 1 is a 275 cm thick layer of light brownish-gray (2.5Y 6/2) clayey silt. The lower boundary of Unit 1 is smooth and clear. Unit 2 is a 10 cm thick layer of grayish-brown (2.5Y 5/2) clayey silt with shale fragments and pebbles. The lower boundary of Unit 2 is smooth and clear. Unit 3 is a 215 cm thick layer of light grayish-brown (2.5Y 5/2) clayey silt. The lower boundary of Unit 3 is smooth and clear. Unit 4 is a 30 cm thick layer of light grayish-brown (2.5Y 5/2) clayey silt with coarse shale fragments and pebbles. The lower boundary of Unit 4 is smooth and clear. Unit 5 was located 1 m above the base of the exposed cutbank and covered by talus and slump material. Excavation of this talus material revealed a 25 cm thick layer of dark grayish-brown (2.5Y 4/2) fine sediments with a concentration of shale fragments and pebbles overlying a bed of shale.

This cutbank is interpreted as colluvium because of the unit thickness in relation to the proximity to the base of the hillslope. The increase of distance between the channel and hillslopes contributes to a decrease in colluvial deposition in the channel banks. Thus, the channel banks become a mixture of reworked colluvium from the hillslopes and alluvium from upstream. The described soil profile is interpreted as Holocene age colluvium deposits forming Ah/Bt horizons, entombing a thin deposit of overbank flood sediments. It is difficult to establish if a unit of Pleistocene age is present for this profile because of the volume of colluvium overlying the channel deposited shale fragments.

Profile 2

Unit 1 is a 120 cm thick layer of light brownish-gray (2.5Y 6/2) clayey silt. The lower boundary of Unit 1 is smooth and clear. Unit 2 is a 10 cm thick layer of grayish-brown (2.5Y 5/2) clayey silt with shale fragments and pebbles. The lower boundary of Unit 2 is smooth and clear. Unit 3 is a 25 cm thick layer of light brownish-gray (2.5Y 6/2) clayey silt. The lower boundary of Unit 3 is smooth and clear. Unit 4 is a 12-15 cm thick layer of light gray (10YR 7/2) clayey silt. The lower boundary of Unit 4 is smooth and clear. Unit 5 is a 35 cm thick layer of light brownish-gray (2.5Y 6/2) clayey silt. The lower boundary of Unit 5 is smooth and clear. Unit 6 is a 10-12 cm thick layer of light gray (10YR 7/2) clayey silt. Unit 7 is an 80 cm thick layer of light brownish-gray (2.5Y 6/2) clayey silt. The lower boundary of Unit 7 is smooth and clear. Unit 8 is composed of 5-10 cm thick alternating layers of light gray (10YR 7/2) and grayish-brown (2.5Y 5/2) clayey silt. Unit 9 is a 12-15 cm thick layer of light brownish-gray (2.5Y 6/2) clayey silt. The lower boundary of Unit 9 is smooth and clear. Unit 10 is a 25 cm thick layer of dark grayish-brown (2.5Y 4/2) clayey silt. Unit 11 is a 5-7 cm thick layer of light gray (10YR 7/2) clayey silt. It was located 1.5 m above the base of the cutbank which was covered by talus and slump material.

As described in Profile 1, this cutbank is also interpreted as colluvium because of the unit thickness in relation to the proximity to the base of the hillslope. This cutbank is in a colluvial apron which extends from the base of the hillslope. It shows a decrease in

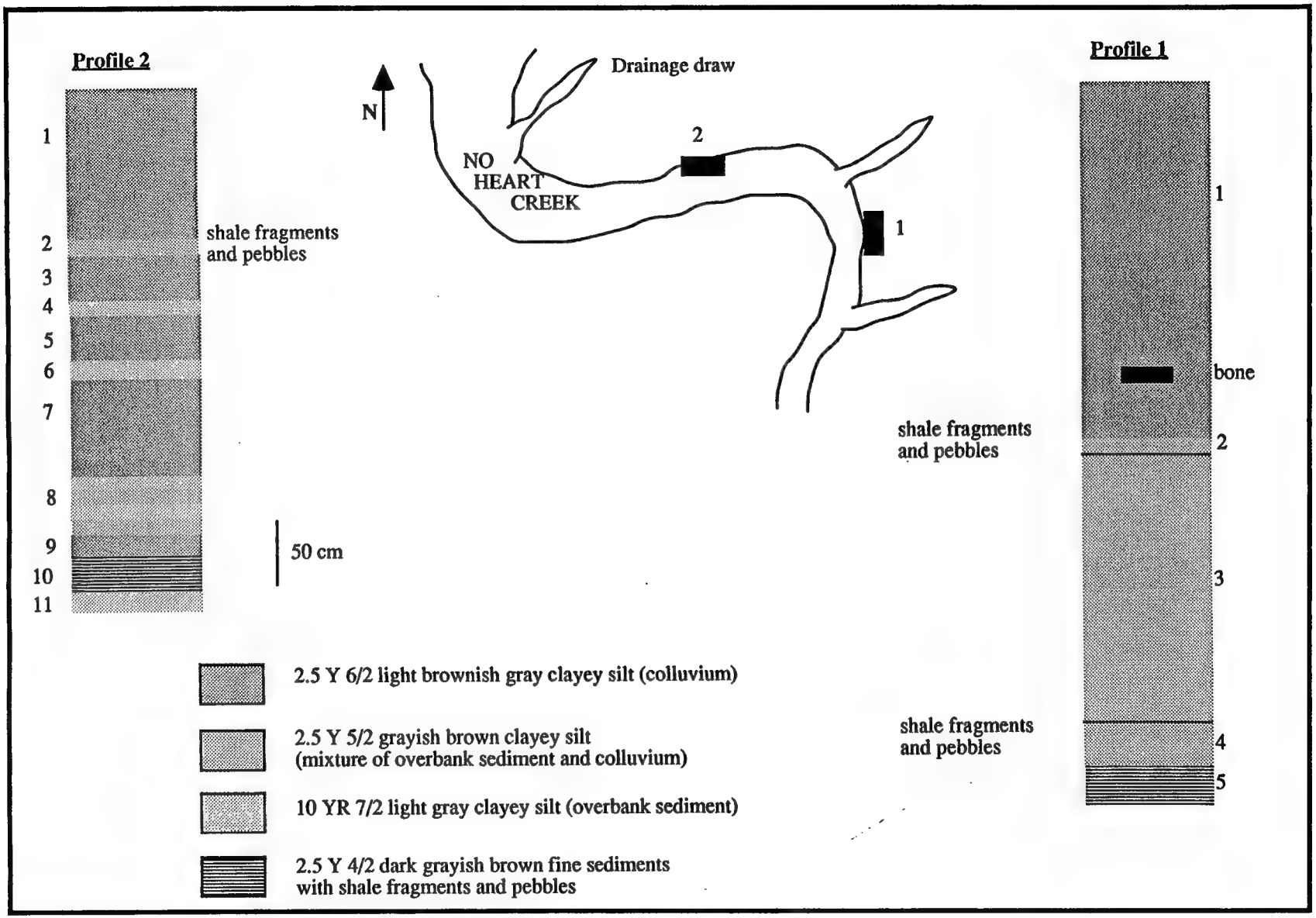


Figure 35. Location 6, No Heart Creek, Profiles 1 and 2.

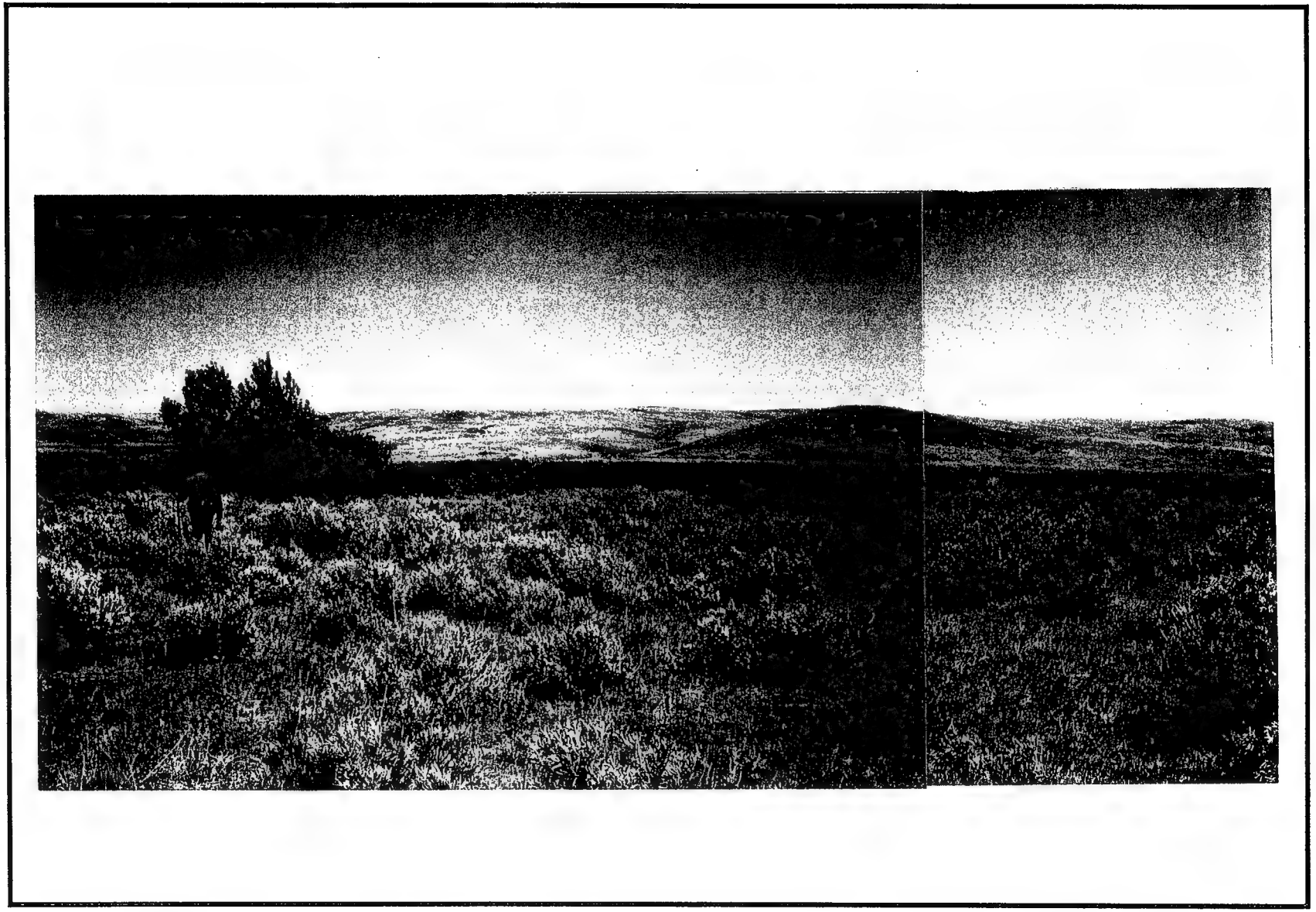


Plate 20. Cutbanks of No Heart Creek at Location 6. The entombed bone was evident in the center cutbank.

Plate 21. Cutbank of No Heart Creek at Location 6. Soil Profile 2 was mapped from this exposure.

thickness of colluvium, and an increase of overbank flooding episodes with depth. The described soil profile is also interpreted as Holocene age colluvium deposits forming Ah/Bt horizons, which entomb thin deposits of overbank flood sediments. At this profile it is also difficult to establish if a unit of Pleistocene age is present because of the colluvium and overbank flood sediments being reworked and deposited.

Summary

The archeological survey resulted in a comprehensive study of the U.S. Army Corps of Engineers land on the west bank of Lake Oahe reservoir in Dewey County. These lands included a broad region of undulating and dissected topography of uplands, interfluves, drainage draws, and tributary floodplains which extended from the Forest City Recreation Area to the mouth of the Cheyenne River of central South Dakota. The objective of the study was to identify areas of Holocene loess deposits with potential for buried soils and cultural materials. Since the archeological survey had been completed prior to the geomorphic study, it was possible to select areas where buried soils had been observed and where archeological sites had been located. The program included six areas in which buried soils were identified at four locations, and two locations where archeological materials were recovered (Figure 36). This geomorphic survey has mapped Holocene loess depositions at the four locations (L2, L3, L4, and L5) where buried soils were entombed, and at one location (L6) with fluvial cutbanks in Holocene colluvium and overbank flood deposits. The remaining location (L1) was a surface scatter of archeological material on and in colluvium of disintegrating Pierre Shale.

The four locations of loess deposition were all identified in cutbanks of Lake Oahe. A combination of depositional environments is evident in these cutbanks; fluvial, colluvial and aeolian. The buried soils identified at these locations have formed within alternating episodes of erosion and deposition of sediment by aeolian or colluvial processes from one part of the Missouri River basin to another. The buried soil units represent alternating periods of slope stability and instability brought on by fluctuating moisture conditions. These buried soils represent periods when precipitation was adequate to maintain relatively dense vegetative cover, which in turn would have stabilized slopes, reducing erosion and the supply of sediment. Under these conditions soils would have been able to accumulate organic matter and begin developing. The intervening lighter units of sediment that are above and below the buried units indicate relatively dry periods. During these drier episodes, vegetation would have been sparser, a condition which would have contributed to slope erosion, providing ample sediment to be wind-borne and become deposited upon adjacent uplands. Upland deposition of aeolian sediments and their eventual preservation may have depended largely on the source of burial material. The burial material in this study included alluvium from floodplain processes, colluvium from disintegrating exposures of Pierre Shale, and multiple episodes of loess deposition. The soils buried by or in loess are useful for stratigraphic interpretation of each location. Because Locations 2, 3, and 4 are in near proximity of one another, stratigraphic correlation between buried units may be possible. However, correlation between these locations and Location 5 may not provide accurate dating of depositional episodes because the local conditions that caused the loess to be deposited may have been different. Thus, the buried soils at similar depths at these locations are not necessarily of similar episodes.

The bone entombed in one of the cutbanks at Location 6 appears to be in colluvium from the adjacent hillslope. This cutbank is in an active alluvial environment of No Heart Creek which is laterally migrating across its floodplain. Additional bone may be revealed with continued cutbank erosion into the colluvium. The recovery of additional bone, and the dating of the recovered bone, may assist in the interpretation of its mode of transport; colluvial, fluvial, or carried and dropped by a predator. It is recommended that this location be observed following spring snowmelt and large precipitation events which may reveal additional bone.

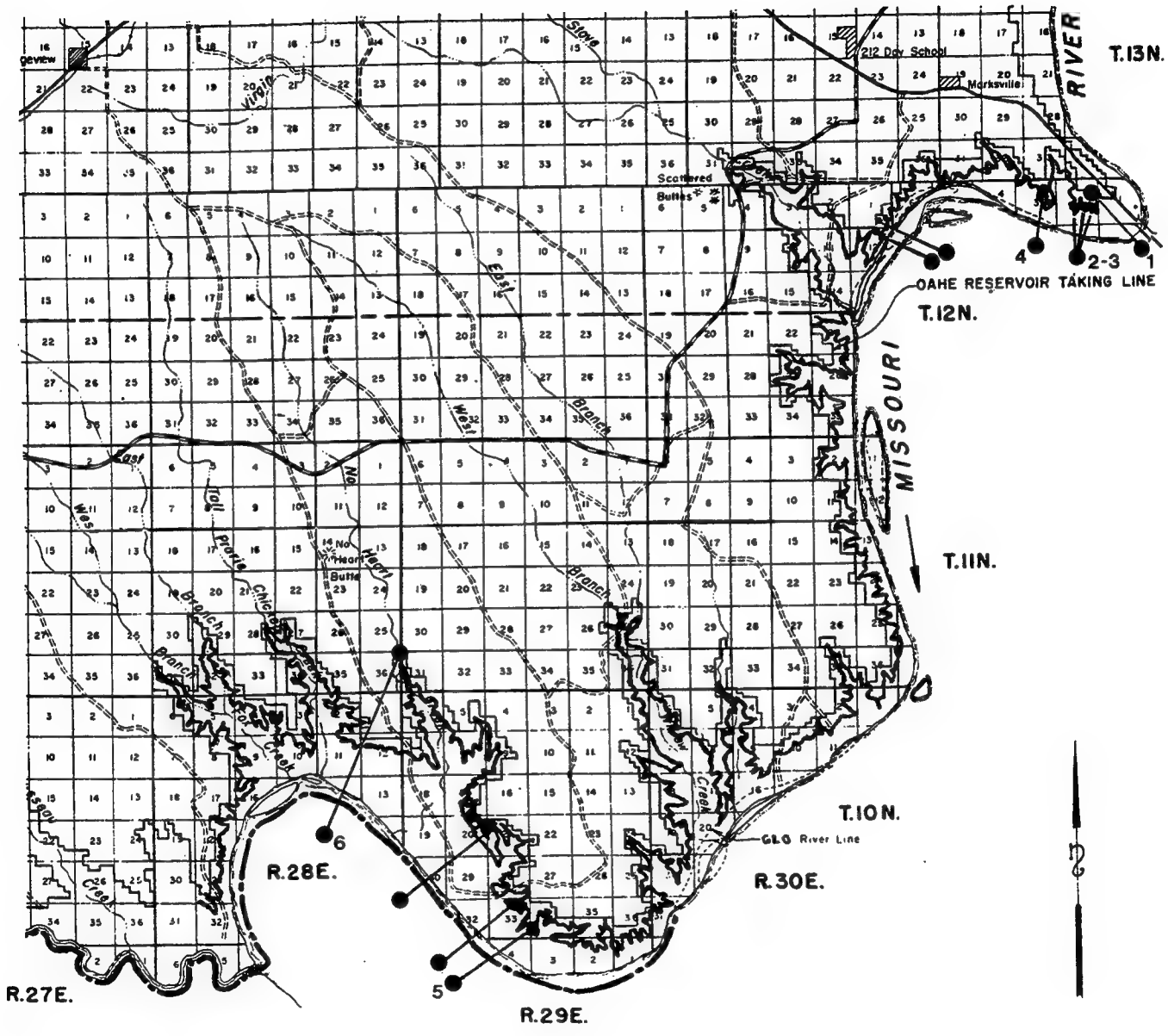


Figure 36. Map of areas of geomorphological importance to the project, including areas with deep loess/soil deposits and sites/isolated finds with buried components. Localities 1-6 are Tracy's field examination areas.

Location of Deep Loess/Soil Mantled Areas

The field evaluation phase of the project was undertaken during the periods March 12-18, March 27-April 10, and May 26-28, 1992. No intact deeply-buried archeological sites were observed during the field visits to the Dewey County/Lake Oahe study area.

A regional geomorphological study by Brakenridge (1989:7-19) showed the potential for localized Holocene loess deposits in this region, as, for example, at site 39DW139, located above Gettysburg, SD (Lueck, Lippincott and Winham 1989). Using existing soil maps and the results of Tracy's investigations (this report), those areas with the potential for buried deposits were determined. The latter locations received a more detailed cutbank inspection during the field survey. Everett White has also accomplished geomorphological studies along the west bank of Lake Oahe (White 1987). Because of 1) the availability of data from prior studies, 2) the area's limited potential for sites, and 3) the aims of the reconnaissance survey, the geomorphological study focused on defining areas of Holocene loess deposits with the potential for buried cultural materials.

Deep loess/soil mantled areas which potentially contain old, deeply-buried cultural deposits are reflected at several locations within the project area (primarily areas shown in Figures 30 and 31). Most of these areas can be abstracted from the soil maps provided in Kalvels and Boden (1979), although based on field observation some loess deposits on small upland ridges are misclassified, e.g., as Dupree-Sansarc Clay (DsE) or Sansarc-Opal Clays (SbE). Provisional studies of the soils suggested five or six areas that may have been misclassified on the soil maps as Dupree-Opal clays, 2-9% slopes, when in fact they may be Holocene loess-capped ridges. There were also seven areas with Lowry silt loam, 2-6% slopes, and Agar silt loam, 2-6% slopes, that represented older Missouri River terraces with a good site potential.

According to Kalvels and Boden (1979), two soil associations, the Sansarc-Opal association and the Sansarc-Dupree association, occur in the project area. Both of these associations have well-drained soils which are formed on uplands in material weathered from clay shale.

The areas listed in Table 9 are considered to have a fair to good potential for relatively old, undisturbed, deeply-buried deposits with relatively good integrity. Whether or not there would be cultural deposits in these areas is another matter, as they may be fairly dependent on the availability of resources such as game, wood and water, which are presently in short supply. Figure 37 shows a plan of one area, HS2, where soils were exposed by a bulldozer cut.

Table 9. Locations with Soil Types Indicating the Potential for Deeply-Buried Cultural Deposits.

Map No. *	Soil Type	Acres	USGS Quadrangle	Legal Description	Sites
97	DoB	2.5	Patch Skin Buttes SW	NE1/4 SW1/4 SE1/4 Sec. 1, T12N, R30E	
97	DoB	12	Patch Skin Buttes SW	W1/2 NW1/4 NE1/4 & E1/2 NE1/4 NW1/4 Sec. 12, T12N, R30E	
98	DsE	8	Patch Skin Buttes SE	S1/2 NW1/4 NE1/4 & W1/2 SE1/4 NE1/4 Sec. 3, T12N, R31E	
98	LwB	7	Patch Skin Buttes SE	N1/2 NE1/4 SE1/4 & SW1/4 NE1/4 SE1/4 & S1/2 SE1/4 NE1/4 Sec. 2, T12N, R31E	
98	LwB	7	Patch Skin Buttes SE	N1/2 NW1/4 SE1/4 & S1/2 SW1/4 NE1/4 Sec. 2, T12N, R31E	
98	LwB	26	Patch Skin Buttes SE	N1/2 NE1/4 SW1/4 & SE1/4 NE1/4 SW1/4 & E1/2 SE1/4 NW1/4 & SW1/4 SE1/4 NW1/4 & W1/2 SW1/4 NE1/4 Sec. 2, T12N, R31E	39DW175
125	DoB	49	No Heart Creek SE	SW1/4 NE1/4 SE1/4 & SE1/4 NW1/4 SE1/4 & E1/2 SW1/4 SE1/4 & SW1/4 SW1/4 SE1/4 Sec. 17, & W1/2 NE1/4 NE1/4 & SE1/4 NE1/4 NE1/4 & SE1/4 NE1/4 & NE1/4 NW1/4 NE1/4 Sec. 20, & SW1/4 NW1/4 NW1/4 & NW1/4 SW1/4 NW1/4 Sec. 21, T10N, R29E	
131	AgB & SbE	12	No Heart Creek SE	NW1/4 SW1/4 & SW1/4 SW1/4 Sec. 34, T10N, R29E	
131	AgB & SbE	26	No Heart Creek SE	W1/2 NE1/4 NE1/4 & NW1/4 NE1/4 & NW1/4 SE1/4 NE1/4 & NE1/4 SW1/4 NE1/4 & NE1/4 NE1/4 NW1/4 Sec. 33, T10N, R29E	39DW172

*Map numbers from Kalvels and Boden (1979).

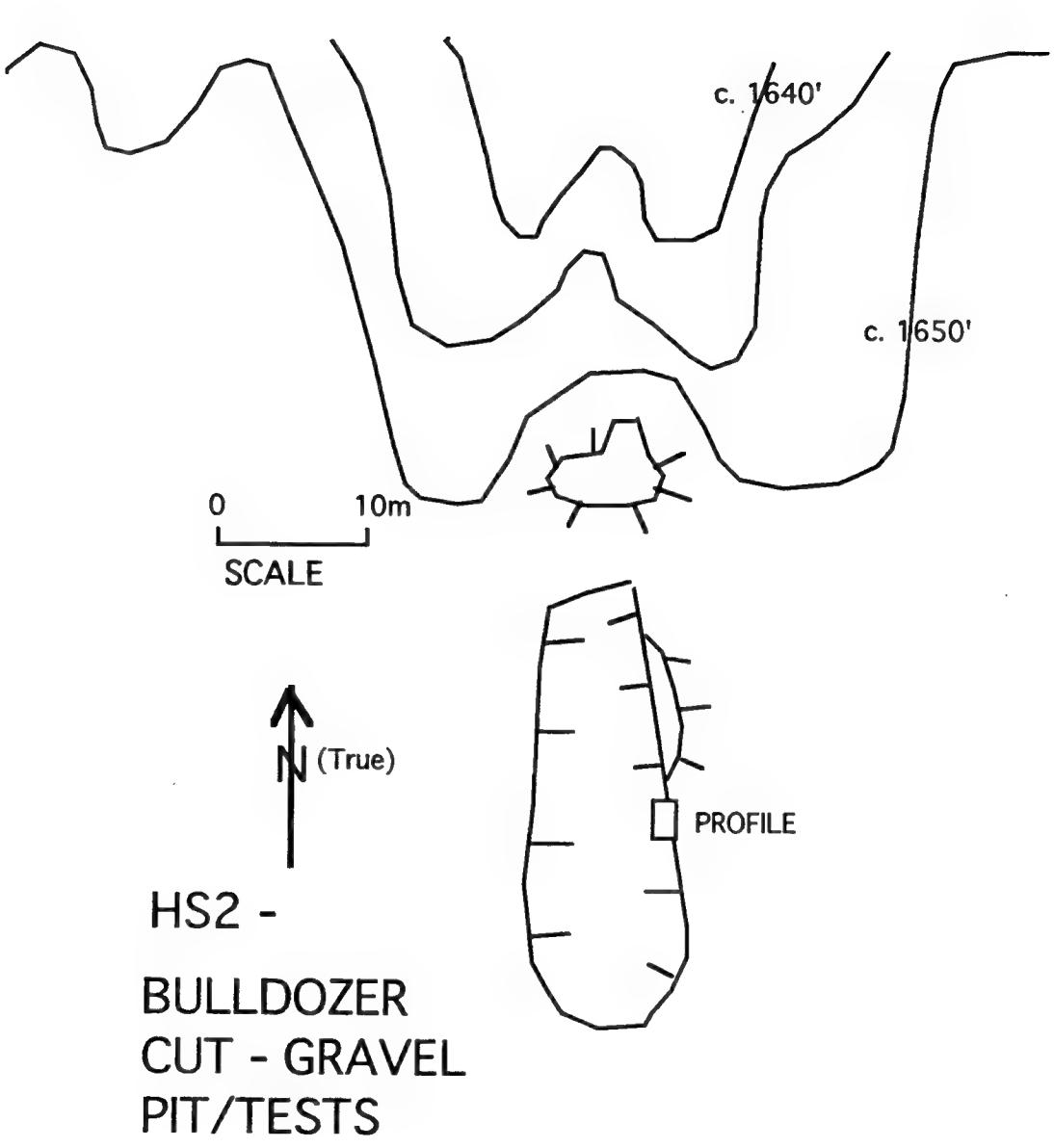


Figure 37. Plan of one area, HS2, where soils were exposed by a bulldozer cut.

13. DISCUSSION AND RECOMMENDATIONS

A site location and site density pattern very similar to that recorded by the earlier survey between the mouth of the Moreau River and the Forest City Recreation Area (Lueck, Lippincott and Winham 1989) was expected for this project. It was anticipated that artifact scatters and earthlodge villages would be associated with terrace locations and that cairns would be associated with ridgetops. Most of the previously recorded cairns have reflected a locational preference for the ends of ridges overlooking the Missouri River. A low site density was expected; no more than 2-3 sites per square mile was predicted (for a total of ca. 45-75 sites).

A site/isolated find density comparison with two nearby survey areas, one in Dewey County (Lueck et al. 1989) and the other in Stanley and Dewey counties (Winham and Lueck 1987), reflects a lower density in the present Dewey County survey area. The previous Dewey County survey (Lueck et al. 1989) covered 7,689 acres (12.01 square miles) and recorded 22 new sites (four of which were isolated projectile point finds), 6 previously recorded sites, and 29 isolated finds. The survey in Stanley and Dewey counties encompassed 11,550 acres (18.05 square miles) and identified 31 new sites, 14 previously recorded sites, and 69 isolated finds. These two projects together yielded a density of 2.41 sites per square mile (53 new sites plus 20 previously recorded sites) and an isolated find density of 3.12 per square mile (98 isolated finds). The Dewey County survey documented in this report examined 15,740 acres and recorded 6 new sites, no previously recorded sites, and 19 isolated finds. Both the site density (0.24 per square mile) and isolated find density (0.77 per square mile) are lower figures than are reflected in the two previous surveys.

Discussions of sites by site type have identified criteria that can be used to prioritize these sites for future work and have summarized site condition, management recommendations and impacts. Clearly a primary concern is with those sites which have the potential to provide additional significant information and which are currently undergoing adverse impacts. The impacts in this area are primarily from shoreline erosion. Sites 39DW170 and 39DW175 are threatened by cutbank erosion; of the two, 39DW175 is thought to be potentially eligible for the NRHP and should receive immediate evaluation and mitigation.

A second area of concern is with buried sites. Table 9 above lists the major project areas (soil types) having the potential to contain deeply-buried cultural deposits. Regular monitoring of these areas should be undertaken to record any buried sites as they are exposed. At the present time, three of the sites located in the Dewey County survey area (sites 39DW172, 39DW173 and 39DW175) are considered potentially eligible for nomination to the National Register of Historic Places.

Finally, a comparison of site density with respect to certain soil types indicates patterns similar to those for sites on the Missouri River above and below the current project area. Occupational sites reflect a preference for old Missouri River terraces. All or portions of three sites (39DW172, 39DW173 and 39DW175) (50% of the prehistoric sites) occur on LwB or AgB soils, which comprise only about half of one percent (0.53%) of the project area soils. Portions of sites 39DW172 and 39DW173 are located on apparently misclassified SbE soils immediately adjacent to those above. The other three prehistoric sites (39DW170, 39DW171 and 39DW174) occur on immediately adjacent portions of the same landforms (old Missouri River terraces) or in nearby areas.

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